

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

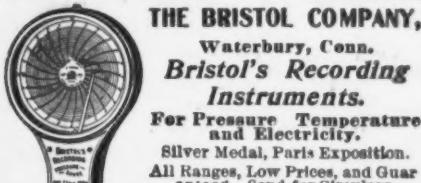
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To PRESIDENT ROOSEVELT,

Oyster Bay.

American Rifles, Ammunition and Men won victory to-day over Great Britain, Canada, France, Norway, Australia and Natal, and bring back Palma trophy.

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Copied from N. Y. HERALD.

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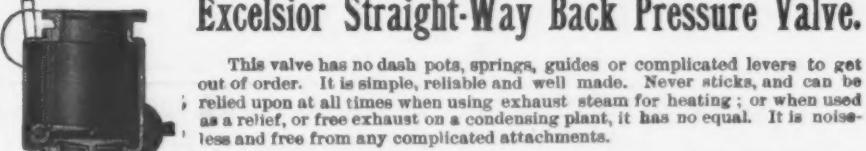
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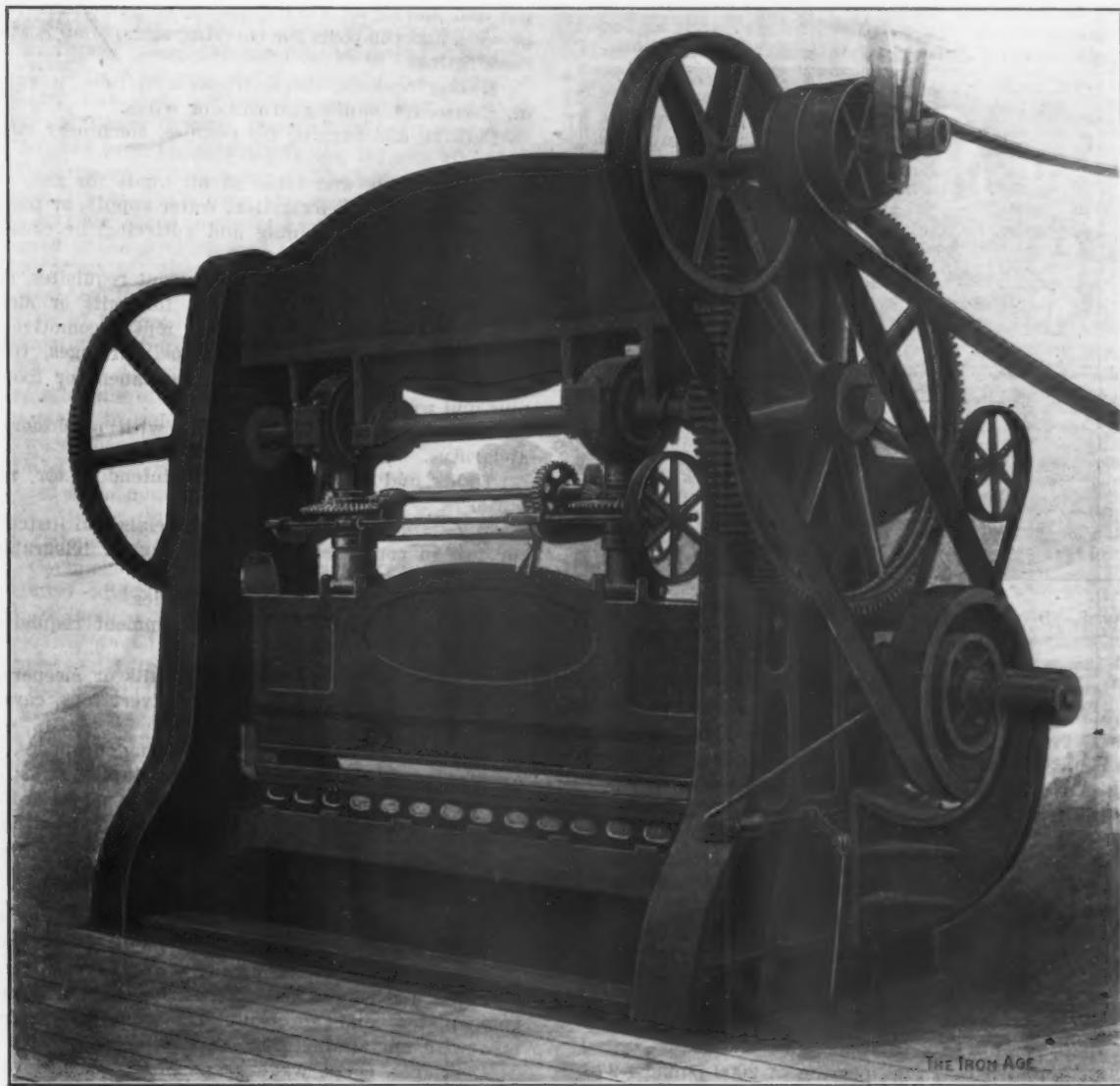
# THE IRON AGE

THURSDAY, JULY 23, 1903.

## The Ohl 13-Foot Power Brake.

George A. Ohl & Co. of Newark, N. J., recently built for the David Lupton's Sons Company of Philadelphia a power press or brake of unusually massive proportions. The machine weighs 90,000 pounds, measures 13½ feet between the housings and will bend as heavy as  $\frac{3}{4}$  inch soft steel in 13-foot lengths. It will also form a skylight bar 13 feet long of No. 16 iron in two operations, the first bending the seven members at once and the second

to 1, the stroke of the hammer 4 inches and the adjustment of the hammer 7 inches. The method of adjusting the hammer will be readily understood from Fig. 2, which is a rear view showing the driving mechanism. This is accomplished by means of a frog motion, actuated by a friction pulley and hand lever by which each pitman is adjusted simultaneously, and the adjustment is kept perfect. The machine is fitted with a die holder, which is placed in a slot in the bed and is removable from either the front or rear, or through openings in the housings.



THE OHL 13-FOOT POWER BRAKE.

squeezing the bar together. It will form caps, ogees, make square or acute bends in one operation, will corrugate or crimp sheets, and, in fact, do any work of this character that can be done between dies.

The machine is operated by a foot treadle and link motion connecting the friction clutch with the spur gears. The driving shaft extends across the rear of the machine, and at each end carries a pinion engaging with the large spur gears. These gears are mounted on a shaft carrying the two eccentrics and their connections which operate the hammer or slide. A brake on the pinion shaft effectually places the hammer under control of the operator at all times, and it can be started or stopped at any part of the stroke. The proportion of gearing is 26

Keys and not set screws are used entirely in the construction, and all bearings are scraped and fitted. The fly wheel is 42 inches in diameter, has an 8-inch face and makes 520 revolutions per minute.

The "Queen" is the first steam vessel to be equipped with turbine engines for service in rough water—namely, the English Channel between Calais and Dover. She is 310 feet long by 40 feet beam, and made an average of 22 knots on her trial trip, and at times much above this. The "Queen" has three Parsons turbines driving three shafts, one screw only upon each of them; she had five propellers when launched, but it is found to perform better with three only. The cost of the vessel was \$425,000,

or about the same as a ship with the usual marine engines. Mr. Parsons claims that all the advantages shown by the use of turbine engines for marine use thus far would be much increased when of larger size for deep water service.

### The Tariff of the South African Customs Union.

The South African Customs Union, which embraces all the British South African colonies, has promulgated a new tariff.

To all intents and purposes, there is now intercolonial free trade throughout British South Africa, and there is, generally speaking, one tariff for the whole of goods from the outside world. Various preferential rebates are allowed to products grown or manufactured in Great Britain, and similar terms are to be allowed on all imports to South Africa from all of such British possessions as will accord similar reciprocal advantages on their imports of South African goods. In some cases the prefer-

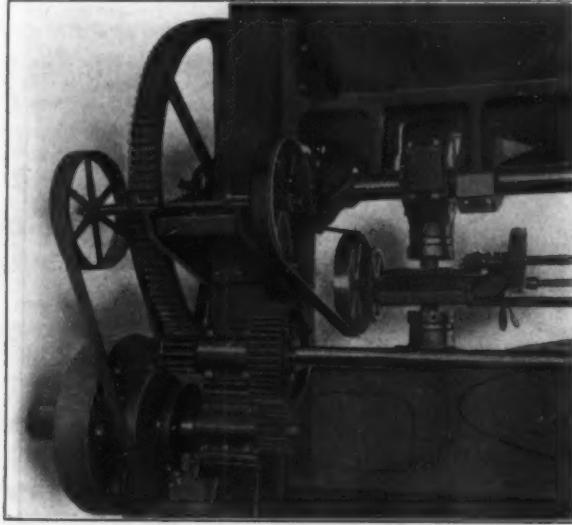


Fig. 2. -Driving and Adjusting Mechanism of the OHL Brake.

#### THE OHL 13-FOOT POWER BRAKE.

ential rebate on goods from Great Britain amounts to 25 per cent. of the duty, and in others the whole of the duty is taken off. Nearly all machinery comes under this latter class. As a rule, it will be seen that with few exceptions the duty on machinery is 2½ per cent., and the whole of this comes off in the case of English machines.

#### Articles Subject to Special Rates.

Blasting compounds, including all kinds of explosives suitable and intended for blasting and not suitable for use in firearms, and collodion cotton, not intended for manufacturing purposes, per pound, 1½ pence.

Coal, per ton of 2000 pounds, 3 shillings.

Coke and patent fuel, per ton of 2000 pounds, 2 shillings.

Gunpowder and other explosives suitable for use in firearms, per pound, 6 pence (and in addition 10 per cent. ad valorem).

Guns and gun barrels, firearms: a, Single, per barrel, £1; b, double and other, per barrel, 15 shillings (and in either case in addition 10 per cent. ad valorem).

Pistols and revolvers, each 5 shillings (and in addition 10 per cent. ad valorem).

Bicycles, tricycles and velocipedes, and parts thereof, per £100, £12 10s.

Motor vehicles, including traction engines and power lorries, per £100, £5.

#### Articles Subject to 2 1-2 Per Cent. Duty.

Asbestos packing and boiler composition.

Assay apparatus.

Bands and belting of all kinds for driving machinery, boiler tubes.

Battery cloth and baize, gauze, matting, sieving and screening, for use in connection with machinery and apparatus.

Bolts, nuts and rivets.

Chain for hauling.

Chimneys, metal—smoke stacks.

Cranes, elevators and shears.

Crucibles, cupels, cupeling furnaces, ingot molds, retorts and furnaces for roasting minerals.

Cyanide of potassium.

Fire escape and fire hose and hose reels.

Hose, steam suction and armored—not including garden—for use in connection with machinery and apparatus.

Machinery not elsewhere described to be driven by cable, electric, gas, heat, hydraulic, pneumatic, steam, water or wind power, including spare parts and apparatus and appliances used in connection with the generating and storing of electric power or gas, electric cable, or wire, and the posts for carrying same, lamp posts, and their fittings.

Mining buckets, skips, trucks and tubs, wheeled or otherwise, for hauling on rails or wires.

Packing and bagging for engines, machinery and piping.

Pipes, piping and tubes of all kinds for gas, steam, drainage, sewerage, irrigation, water supply, or pumping, not including down piping and guttering, or cocks and taps.

Railway construction or equipment requisites, as follows: Rails, sleepers, fastenings for rails or sleepers, girders, iron bridge work, culvert tops, locomotives, tenders, ballast trucks, goods wagons, carriages, trolleys, engine water tanks, turntables, permanent or fixed signals and weigh bridges.

Rubber for use in connection with machinery and apparatus.

Tanks and vats, suitable and intended for mining purposes.

Telegraphs and telephones, materials and instruments for use in construction and working on telegraph and telephone lines.

Traction engines and power lorries.

Tramway construction and equipment requisites, as follows:

Rails, sleepers, fastenings for rails or sleepers, iron gates, girders, iron bridge work, culvert tops, cars, trolleys, water tanks and turntables.

Wire and wire netting for fencing, droppers, gates, hurdles, posts, standards, strainers, staples, stiles, winders and other materials or fastenings of metal ordinarily used for agriculture or railway fencing, and baling wire.

Wire rope.

#### Articles on Which There Is No Duty.

Agricultural implements and machinery, and all apparatus and plant usually and principally employed in farming operations, binding twine and harvest yarn.

Brass and copper and composition metals in bars, ingots, plates, and sheets, plain, including perforated, otherwise unmanufactured.

Carriages, carts, wagons and other wheeled vehicles, the manufacture of South Africa, imported into the Union overland.

Fire clay, terra alba and fire bricks.

Glue.

Iron and steel, angle, bar, channel, hoop, rod, plate, sheet, or plane, including perforated and galvanized, rough and unmanufactured, not including corrugated sheets.

Launches, tugs, lighters, provided that when condemned or landed to be broken up duty shall be paid at the Customs on the hull and all fittings, according to the tariff that may then be in force.

Lead, bar, pipe, sheet, foil, and acetate of.

Lifeboats, belts and buoys and other life saving apparatus, imported by any recognized society.

Metals of all sorts in bars, blocks, ingots, and pits for founding, not elsewhere described.

Printing, lithographic paper cutting, folding, numbering and perforating machines, or press blocks, forms, fonts, plates, rollers, stones and type, and all other apparatus, suitable only for use in the bookbinding and printing industries.

Sprays and sprinklers and other apparatus for destroying pests or diseases in stock plants or trees.

Tin and zinc, bar, plate, or sheet, plain or perforated, but otherwise unmanufactured.

Water boring and pumping apparatus.

#### Articles Not Enumerated.

All goods, wares or merchandise not elsewhere charged with duty, and not enumerated in free list, and not prohibited to be imported into the Union, shall be charged with duty of 10 per cent. ad valorem.

### The Inquiry As to Restrictions on Output.

WASHINGTON, D. C., July 21, 1903.—The investigation of the important industrial question as to the extent to which the normal output of the principal industries of the country has been reduced by restrictions imposed either by employees through their unions or by employers, which has been undertaken by the Bureau of Labor of the Department of Commerce and Labor, is attracting very general attention among the manufacturers of the country, and numerous inquiries have been received here with regard to the methods that are being pursued in the collection of data. The general purpose of the investigation was described in these dispatches a fortnight ago, but in view of the great interest manifested in the work the officials of the bureau have supplied the correspondent of *The Iron Age* with additional details, including a tentative schedule of inquiries, which, although departed from in many instances by the special agents engaged on the work, nevertheless indicates clearly the ground covered and the character of the information sought to be obtained from manufacturers.

The subject of this investigation was originally suggested to Colonel Wright, Commissioner of Labor, by Prof. John R. Commons of the Civic Federation, and the work was planned and undertaken before the bureau was merged into the new Department of Commerce and Labor. In view of the fact that the investigation to be of value would necessarily involve an elaborate canvass of the leading manufacturing industries of the country, four special agents were assigned to assist Professor Commons, while three foreign agents were engaged to prepare reports upon conditions in the principal European countries.

In order that the information gathered may be technically analyzed, these special agents have been instructed not only to report the general character of the establishments visited by them, but the name and full technical description of the product, and the corresponding unit in the industry as conducted in Europe. A special schedule is provided for each specific operation covered by the inquiry, and the machine or implement used in the operation, the name and address of its manufacturer, and the motive power used, are to be stated in detail. The number of persons engaged on one machine, or the number of machines tended by one person, the hours constituting a day's work, the quantity of the unit of product per machine per day, are also required to be given, together with the method of payment of employees, whether by the hour, day, week or piece, and whether premium, bonus, contract or profit sharing plans are in force.

#### Restrictions by Employees.

Under the general head of "restrictions on output imposed by employees at the present time or formerly," the agents have been instructed to ascertain what restrictions, if any, have been imposed on the number of units of product per hour or day; what obstacles, if any, have been interposed to the introduction of labor saving machinery; what objection has been made to the introduction of a system of division of labor; what restrictions have been interposed as to the maximum number of machines to be operated by one employee; what minimum limit to the number of employees per machine has been sought to be fixed, and what obstacles have been inter-

posed to piece work, premium, or bonus, contract or subcontract systems, or to the levying of fines for under-production. In this connection the following questions are propounded: Are employees allowed to work at two or more trades? Is the employer restricted in engaging or dismissing help on account of speed? Where a union has established a minimum rate of pay on time work does the employer pay more than the minimum for speedy workmen, or for better quality of workmen? Manufacturers are also requested to state the probable extent of any of the foregoing restrictions in the trade at large; that is to say, the percentage of establishments in which such restrictions are imposed.

Special inquiries are directed to ascertaining the methods adopted by labor organizations for enforcing restrictions on output. These inquiries cover the methods of maintaining the strength of the union, including limit on apprentices, the enforcement of penalties against employees working beyond the limits, the employment of union labels, the use of the boycott to coerce employers, the employment of shop stewards and business agents, the signing of formal agreements with employers, &c. If restrictions formerly existed but have been abandoned, the agents are instructed to ascertain their character, and when and why they were abandoned.

An important series of inquiries have been formulated under the general head of "justification advanced by employees for restrictions on output," and agents have been directed to inquire whether these restrictions have been imposed for the professed purpose of maintaining good quality, to prevent "rushing," or to protect health, to make more work for the employees, or to furnish work for the unemployed; to prevent reduction in piece prices, to prevent the introduction of cheap labor, or for any other reason. Agents have been directed to gather these details of the schedule with special care, and to differentiate carefully between the various reasons advanced for the restrictions referred to. Special care is also to be taken in securing answers to the question as to whether the "employers willingly consent to these restrictions imposed by employees in order to maintain a high quality of product."

#### Restrictions by Employers.

With regard to the imposition of restrictions on output by employers or associations of employers, a general inquiry has been formulated with a request for a detailed description of the restrictions and their results, and also as to whether restrictions were formerly imposed, but have since been abandoned. The officials of the Labor Bureau recognize, of course, that few restrictions are placed upon output by employers, but under this head they hope to gather data concerning the closing down of plants for certain annual or occasional periods, the reduction of hours in winter below those worked in summer, &c. The bureau has information that in certain industries output is curtailed to prevent overproduction, and that as a result the annual earnings of employees are materially reduced.

Special attention will be paid, both by the special agents and by the editors of this report, to ascertaining how the quality of the product turned out under restrictions compares in style, durability or other essential qualities to that produced in unrestricted establishments. It is fully appreciated that it will be very difficult to secure an accurate comparison of such products in many of the leading industries, but special efforts will be made to present reliable if not absolutely conclusive statements on this point. In industries which have been very completely unionized it is not believed that comparable data can be obtained, but in a number of important industries, in which both union and nonunion establishments are operated, it is thought a fair comparison can be instituted, taking into account, of course, all the other conditions having a bearing upon the quality of the output.

The reports of the special agents detailed to investigate the conditions in Europe are beginning to reach the Department, those agents having been first in the field. The report promises to be so voluminous as to make it impracticable to print it in the form in which the bureau's bi-monthly bulletin usually appears, and it will probably be published as a special report.

W. L. C.

## The Consolidated Lake Superior Company.

### President Shields' Report.

There has just been published the report of C. Shields, the president of the Consolidated Lake Superior Company, on the various productive properties of the company, from which we take the following:

#### Iron Ore Properties.

The Helen mine, on the Michipicoten range, is the only iron ore property actually developed, and the only one upon which we can safely figure at the present time. Owing to the working of this mine by contractors, and the several changes in contractors, the property has not yet been systematically developed, and it is not in condition to yield the output and to show the mining costs that would have been possible with proper development. The mine is now under good management, and the faults are being remedied as rapidly as possible. Taking as datum the former level of Lake Boyer, now drained, there was a peak of ore which originally rose about 95 feet above datum. This was removed and open workings were carried to a depth of about 25 feet. The first underground level was 85 feet below datum, and the bottom of the open pit is now being broken down to this level. Ninety-five feet below this level, or 185 feet below datum, is the second level, where a large amount of development work has been done. The most important fact in connection with the Helen mine has just been established by the work that is being done to determine the limits of the ore body on the second or lower level. It has been demonstrated beyond doubt that the walls between which the ore body lies are not converging thus far, as has been assumed by some of the experts who have examined this mine. On the contrary the walls are practically parallel, and all our engineers agree that they probably continue thus to a considerable depth. The quantity of ore above the lower level can be closely calculated, and it is safe to count upon about 700,000 tons thus measured up. All of the drill holes were run from the old surface and the ore they penetrated has been worked out. To determine the depth and area of the ore body below this lower level drill holes will be put down at once. Present knowledge of the mine warrants the calculation that every foot of additional depth within the walls now defined will add 7500 tons to the present ore body.\*

In three years the Helen mine has shipped 584,000 tons of ore. The ore mined during the winter and on the stock pile at the opening of navigation amounts to 102,841 tons of No. 1 ore and 44,700 tons of No. 2 ore. The present output is from 1000 to 1200 tons per day, which we may be able to bring up to 1500 tons during the season. We are counting upon the shipment of about 350,000 tons during the season. This will about represent the shipments during our fiscal year, ending June 30, 1904, and allowing a profit of 30 cents per ton, which is low enough to be entirely safe, the Helen mine should yield a net profit of not less than \$105,000 during the year. This is the mine profit only, as the transportation is considered separately.

Helen ore is of non-Bessemer grade, and it will average for this season about: Iron, 59; sulphur, 0.14, and phosphorus, 0.10.

The quality is improving as the deposit deepens. The ore is of such physical structure as to make it in demand for use in mixture with soft and fine Bessemer ores.

On the Michipicoten range there are several other iron ore prospects owned by your company, which are of sufficient promise to warrant thorough examination. The Josephine property, on the line of the Michipicoten branch of the Algoma Central & Hudson Bay Railway, is now being redrilled in order to determine the character and extent of the deposit more definitely before proceeding further with the shaft, which has already been put down

\* Since this report was written the drill has been put down 107 feet below the lower level, and is still going in good ore. July 11, 1903.

about 150 feet.\* Our mining engineers who are familiar with the characteristics of the Michipicoten range express a great deal of confidence in the Josephine and several other prospects upon which more or less work has been done. There is a probability that we may find at least one good deposit of Bessemer ore among them, but it is better to leave them all out of our calculations until we know more about them.

On the hill above the Helen mine there is a large deposit of siderite—carbonate of iron—which has never been explored, but which seems to be of large extent. This ore has value and might be used in our own blast furnaces; but as we would have to roast it and build kilns for this purpose, I have left it out of consideration for the time being. We are experimenting with the ore, however, in order to determine what can be done with it.

On the Mesaba range we have one-quarter of Section 16, which has been known as the Woodbridge mine. Only a small portion of this tract has been explored with the drill, but within this limited area 2,500,000 to 3,000,000 tons of good non-Bessemer ore have been measured up. There is reason for the expectation that this deposit may be found to cover a larger area of the tract. This property lies about 4 miles from a railroad and no development has been begun. While this deposit seems to be an asset of value, it does not enter into any of our present calculations.

In the Helen mine there is one pocket of pyrites which our engineers estimate to contain about 150,000 tons, and there are probably other deposits of importance. These are of value both for our sulphite pulp mill and for sale. While we may be able to realize some substantial income from this source during this season I have not counted upon anything, as we have no contracts actually in hand at the present time.

#### Iron and Steel Works.

The iron and steel plant at Sault Ste. Marie, Ontario, includes two blast furnaces, with by-product retorts and beehive kilns for making charcoal; a Bessemer steel plant and a rail mill. The smaller stack which is intended to use charcoal is practically completed. The by-product plant of 20 retorts and 40 beehive kilns, with 16 more which are being built, will furnish the charcoal necessary for this furnace. The construction of the second furnace, which will make coke iron, is well advanced, and the ore unloading and handling plant is approaching completion. We are counting upon having both furnaces in blast by July 1, and at present there is nothing to indicate that we shall fail in this. The Bessemer steel plant and rail mill were run for several months last fall, and beyond some changes which have been suggested by this experience, the works require no further construction at present. This whole plant is well designed and ought to operate with economy. The experts who examined the works for the bankers agreed upon this point.

At present, although the prospecting now being done on the Josephine mine indicates the existence of Bessemer ore of good quality, we have no Bessemer ore of our own. We can use part Helen, but shall have to buy Bessemer ore for this mixture. The two furnaces will not make enough pig iron to enable the rail mill to run to the best advantage; consequently it will be necessary to buy some pig iron to supplement our own production. Even under these conditions we can probably make a good profit on rails, particularly as the duty of \$7 per ton will go into effect when we start the works and show that we can make rails in quantity and quality to meet reasonable requirements. We also have the benefit of the bounties which the Dominion Government pays on pig iron and steel ingots. Since these estimates were prepared the Canadian Government has increased the pig iron and steel bounties 20 per cent., which will increase the estimated profits on steel rails about 87 cents per ton.

The profits which this plant is expected to yield are based on estimates by the general superintendent, D. D. Lewis, which have been independently reviewed, and which I am confident are safe. With 20 per cent. of

\* Since this was written four drill holes have been put down on the Josephine with satisfactory showing of ore that promises to come within the Bessemer limits.

Helen ore at \$2.25 per ton, 80 per cent. of old range Bessemer at \$4.25 per ton, coke at \$6 per ton and charcoal at 6 cents per bushel, the cost of charcoal pig iron is figured at \$12.66 per ton and coke iron at \$13.73 per ton, credit being given for the bounty in both cases. With 250 tons per day of coke iron and 150 tons of charcoal iron from our own furnaces, and 100 tons per day of coke iron from Midland Furnace, in which we have a two-fifths interest (taking this iron at \$20 per ton), we have a daily supply of 500 tons of pig iron at an average cost of \$14.66 per ton. This will give enough iron to run the mill economically.

On this basis the mill cast of rails is estimated at \$22.47 per ton. Interest and depreciation have been allowed at 10 per cent. on \$4,500,000, which represents the investment in the furnaces and mill, with all of their accessories, and the charcoal kilns and by-product plant. The product of rails for the fiscal year has been put at 125,000 tons, or 500 tons per day for 250 days. On this basis there would be a charge of \$3.60 per ton for interest and depreciation, and adding this to the mill costs makes the total cost of rails \$26.07 per ton. Assuming that we will get from \$30 to \$31 per ton at the mill for rails, which is allowing for only a small portion of the advantage accruing from the \$7 duty, there will be at least \$4 per ton profit, or \$500,000 on an output of 125,000 tons, but to be safe this has been cut down to \$400,000. There seems to be no reason to doubt our ability to get this profit out of the rail mill, even with all the uncertainties which are encountered in starting a new plant under conditions which present many new problems.

#### Lumber Operations.

The logging and lumber operations, which have involved so much preparatory work, are now showing the first returns, and a substantial profit can be counted upon from the year's operations.

The new saw mill at Sault Ste. Marie, Ontario, has been running since the first of the year and has cut from 80,000 to 125,000 feet per day, besides laths. The cut is mainly pine and the entire output for the season has been sold at \$22 per thousand for merchantable stuff, \$10 for culs and \$5 for dead culs.

Last winter's cut of logs is not sufficient to keep the mill in operation throughout the year, and a further supply by rail is too uncertain to count upon. Eight months of operation therefore has been taken as the basis for calculation. In that time, at the prices at which the product has been sold and at the costs of manufacture which have been ascertained from the operations of the past few months, this mill ought to yield a profit of \$85,000 for the coming year.

#### Pulp Mills.

The Sault Ste. Marie Pulp & Paper Company have been losing money heavily on their pulp. With logs at several dollars per cord below the price other mills are paying and making money, these mills ought to be making good profits. I have hardly been here long enough to get down to the bottom of this matter, but the profitable operation of these plants seems to be wholly a question of management. The losses on the sulphite mill appear to have been due to the attempt to get gas from the roasting of pyrrhotite, which has not yielded enough gas to enable the mill to make more than 18 or 20 tons of pulp per day on a rated capacity of 50 to 60 tons. The substitution of pyrites, or sulphur when pyrites could not be had, has resulted in increasing the output to about 40 tons per day. The fourth dry machine, which has just been installed, completes the equipment of this mill as planned.

The ground wood mill has lost much time on account of shortage of logs, which should have been provided against.

It is hard to tell what these mills ought to return, but I should say that both of them ought to show not less than \$75,000 for next year. Either of them ought to make more than that if the costs can be brought down where they should be. The screenings of the ground wood are now made into a kind of building paper, which costs little and brings a good price when it can be sold. It is a new product, however, for which a market must be found and there is a large stock on hand.

#### Railroads and Steamships.

The transportation interests of the company are considered as independent of the other operations, and are entitled to be credited with a fair profit on materials carried for other departments, inasmuch as all of these materials have been taken in other calculations at their delivered cost. The freight on iron ore, for example, is a legitimate earning for the railroad and steamships, as it is deducted from the price realized on the ore. The transportation charges, however, should be reasonable, and other departments should not be burdened for the sake of making the transportation lines show a large profit.

The four ore steamers and two ore barges and the three passenger steamers can be operated at a profit, particularly as there are no chartered boats this year to eat up all the profits our own vessels make. The boats can probably earn at least \$125,000, but it seems best to set aside \$75,000 of this sum for depreciation, as no allowance appears to have been made for this heretofore. This should leave \$50,000 as the net earnings of the vessels for the coming year, and this is a safe figure. With 350,000 tons of ore to move and large quantities of other materials, the Algoma Central & Hudson Bay Railway can probably earn \$200,000, but \$175,000 is surely a safe estimate. The Manitoulin & North Shore Railway, although but a short line, has a steady traffic, most of which is for outside parties, and the earnings therefore are mainly new money. This road can be depended upon for not less than \$25,000.

#### The Lake Superior Power Company.

The principal earnings of the Lake Superior Power Company are accounted for elsewhere in the income from the Helen mine, which is owned and operated by this company. A large amount of electrical power is furnished to other companies, but this is omitted from these calculations. There are two power contracts, however, which it is proper to include in this estimate of earnings. The Canadian Electric-Chemical Company pay \$12,500 per annum, and the International Transit Company will use and pay for about \$8000 worth of power. About \$20,000 will come from these two sources.

#### Uncertain Operations.

The foregoing portion of this report includes all that it seems wise to consider as sure to produce revenue, and everything in any way doubtful has been excluded. The only important operation that does not appear among the profitable undertakings is the nickel properties.

A contract was executed about a year ago with Connecticut parties, who agreed to take a large quantity of copper-nickel matte and to erect works on the Michigan side for the manufacture of "white metal." This contract, if carried out, would yield a large profit to the company; but at the present time the fulfillment of the contract is surrounded with so much uncertainty that I think it should be left out of our calculations, at least for the present.

Upon the completion of the Bessemerizing plant we shall be able to produce matte of salable grade. There is probably a market for the product, but that market must be found before we can figure any profits. On the assumption that the white metal was to be depended upon, no effort was made to find any other customers for the matte; consequently there is no immediate prospect of realizing anything on the large amount of capital invested in the nickel-copper property.

An electrolytic refining plant for the treatment of nickel-copper matte and the separation of the metals would involve the expenditure of several hundred thousand dollars, and no provision for such a plant has been made in the plans under consideration.

#### Fixed Charges.

There are certain fixed charges which should be considered in connection with the foregoing estimates of profits. Against the property of the Michigan Lake Superior Power Company there is an issue of first-mortgage 5 per cent. bonds, amounting to \$3,500,000, the interest on which amounts to \$175,000 per annum.

The Consolidated Lake Superior Company own \$243,000 of these bonds, the interest on which might be deducted; but as it might be deemed desirable to dispose of

these bonds and add the proceeds to our working capital, I have put down the full amount of the interest charges.

On the two street railways and the ferry there is an issue of bonds, which will amount to about \$600,000 when final settlement of the construction and equipment accounts is made. At 5 per cent. the interest on these bonds will amount to \$30,000 per annum.

The Tagona Water & Light Company have \$160,000 of 6 per cent. bonds outstanding, which require \$9600 per annum for interest.

In the original purchase of the water power canal and franchise on the Canadian side the interest on certain debentures of the town was assumed. There are \$228,000 of 5 per cent. debentures, which take \$11,400 for interest, and \$25,572 of 4 per cent. debentures, which call for \$1023 of interest.

#### Summary of Earnings and Fixed Charges.

The estimated earnings for the various undertakings for the fiscal year ending June 30, 1904, and the fixed charges to be met during the same period are summarized below:

##### Estimated Earnings.

Helen iron ore mine.....	\$105,000
Steel rail mill.....	400,000
Saw mill.....	75,000
Veneer mill.....	40,000
Pulp mills.....	75,000
Algoma Central Steamship lines.....	50,000
Algoma Central & Hudson Bay Railway.....	175,000
Manitoulin & North Shore Railway.....	25,000
Street railway and ferry.....	30,000
Michigan Lake Superior Power Company.....	110,000
Lake Superior Power Company.....	20,000
Tagona Water & Light Company.....	35,000
Car shops.....	15,000
Grace gold mine.....	15,000
Total.....	\$1,170,000

##### Fixed Charges.

Michigan Lake Superior Power Company.....	\$175,000
Street railway and ferry.....	30,000
Tagona Water & Light Company.....	9,600
Town debentures.....	12,423
Total.....	\$227,023

Total estimated earnings.....	\$1,170,000
Total fixed charges.....	227,023

Estimated net earnings for 1903-04..... \$942,977

This statement can be accepted as a conservative estimate of the earnings for the coming fiscal year. Any change from these figures is likely to be in the direction of larger earnings rather than a decrease.

**Scarcity of Lumber.**—Recent forest fires in the timber belt of Maine have devastated large tracts of land, hundreds of square miles, which cannot be replaced in many years, and the freshets in the Mississippi have carried away millions of feet of logs, which will never be recovered. A writer in the *Sun* says that more lumber has been destroyed this season by misadventure than manufacturers can cut in a year. These casualties and the natural consumption tend to make commercial timber scarce and high, and those who contemplate building where wood is required are advised to do so immediately, as it will be a long time before it can again be had at present rates. Southern lumbermen who furnish yellow pine are 90 days behind their orders, and the price has been advanced on some grades \$2 per 1000 feet. The writer above quoted says that forestry is a very slow remedy for renewal of standing wood, for it takes 30 to 40 years to grow trees to 24 inches diameter, which is the size demanded for boards; the supply of hemlock in the immediate vicinity of this market has been exhausted, and people who require it are compelled to buy 300 miles away; there is practically no wood of this kind left in Pennsylvania, unless it may be in the western part of the State, and when this is cut and consumed it will be necessary to use other varieties. White pine, oak and cypress have advanced during the year from \$6 to \$14 per 1000 feet. The increase in population annually reaches large figures, and the consumption of lumber must keep pace with it, but from the facts quoted there will be a shrinkage instead of a surplus over former years. In this condition of affairs the importation of foreign woods from our new possessions should receive a decided impulse.

## Notes from Great Britain.

### The Markets.

LONDON, July 11, 1903.—The iron markets generally continue sluggish. There is continued anxiety as to the extent of summer orders. Even the hematite pig iron trade, which has been active longer than most of the other departments, now slackening, and there is some probability of one or two furnaces going out of blast. The smelters in the district of Barrow-in-Furness are busy, especially those who are also makers of steel. The American demand has distinctly fallen flat. I anticipate that by the end of the year British exports of pig iron to the United States will approximate to the quantities and values of the early months of 1902. The Birmingham quarterly meeting was held this week and was fairly well attended, manufacturers and agents being present from London, South Wales, Lancashire and the North. Although representative in point of numbers, little business was transacted. It was one of the quietest meetings on record. There was a fair inquiry, but in every branch there were complaints that the amount of business resulting was comparatively small, and indications of any immediate brightening up of trade were lacking. At the same time foreign competition seemed more pronounced. Further "cuts" were made in German and Belgian material. For instance, Belgian bars were freely offered at £5, and joists at £4 6s., while German steel billets were again weaker.

The usual number of sectional meetings took place in the finished iron branches, but no changes were made in prices.

### The Half Year's Export Trade

The following figures give the complete returns of exported iron and steel manufactures for the first half of this year, together with comparisons for the two previous years:

	Six months ended June 30,		
	1901.	1902.	1903.
Iron and steel and manufactures thereof.....	£12,616,510	£13,351,101	£15,590,383
Other metals and manufactures thereof.....	3,262,150	3,128,029	3,284,532
Cutlery, hardware, implements and instruments...	2,077,804	2,116,739	2,199,946
Telegraph cables and apparatus.....	1,719,360	887,185	1,438,854
Machinery.....	9,054,073	9,031,606	9,830,325
Ships (new).....	4,973,570	3,053,256	2,305,971

The heavy fall in the value of new ships is very striking, but for the rest it will be observed that in the export trade to a large extent we have been merely beating time. The exception is in the first section—iron, steel and manufactures thereof. The exports of these goods show a progressive increase, which is significant. The nature of these exports will best be appreciated in the following table, the classification having been considerably changed in 1903:

#### British Metal Exports, First Half of the Year 1903.

	Six months ended June 30,		Six months ended June 30,	
	1902.	1903.	1902.	1903.
	Tons.	Tons.	£	£
Iron ore.....	1,597	2,489	4,837	6,853
Old and scrap iron or steel.....	48,793	80,492	155,840	250,685
Other metallic ores...	10,192	11,072	36,879	66,900
Pig iron.....	377,530	595,458	1,180,810	1,928,120
Bar, angle, bolt and rod.	61,728	.....	509,238	.....
Wrought: Bars.....	54,123	.....	443,919	.....
Wrought: Rods.....	4,258	.....	29,671	.....
Angles and shapes or sections.....	2,056	.....	15,382	.....
Railroad (iron or steel):				
Rails.....	342,489	.....	1,849,059	.....
Chairs and sleepers.....	25,203	.....	140,042	.....
Unenumerated....	345,500	406,829	2,040,934	2,364,203
Wire of iron or steel and manufactures thereof (except telegraphic wires).....	28,545	.....	526,948	.....
Do., including telegraphic wires.....	.....	29,405	.....	567,041
Sheets and boiler plates.	20,466	.....	185,594	.....
Galvanized and corrugated sheets.....	160,520	177,155	1,977,737	2,197,326
Hoops (iron or steel).....	17,937	.....	150,601	.....
Hoops and strips of iron.....	13,373	.....	107,163	.....

Cast and wrought iron and all other manufacturers (except ordnance) .....	167,010	.....	2,507,157	.....
Anchors, grapnels, chains and cables .....	13,019	.....	232,970	
Pipes .....	50,513	.....	310,388	
Cast iron and manufacturers thereof, unenumerated .....	30,603	.....	402,031	
Steel: Steel, unwrought. 135,949	.....	1,319,399	.....	
Ingots, blooms, billets or slabs or similar partly manufactured .....	11,276	.....	63,055	
Bars, angles, rods and shapes or sections .....	70,259	.....	911,527	
Armor plates (iron or steel) .....	57	1,073	7,718	115,801
Brass and manufactures of, not being ordnance .....	3,101	3,746	301,086	350,404
Copper .....				
Unwrought, in ingots, cakes or slabs and precipitate .....	11,973	10,998	681,445	670,546
Wrought or manufacturers, unenumerated .....	7,124	8,365	517,465	590,707
Mixed or yellow metal .....	6,323	7,040	358,020	380,030
Lead: Pig and manufacturers of .....	17,181	16,380	240,061	232,853
Tin: Unwrought .....	2,570	2,778	303,425	364,157
Zinc or spealer, unwrought and wrought .....	4,280	3,777	72,985	69,268
Steam engines:				
Locomotive .....		.....	1,052,026	1,303,520
Agricultural .....			327,112	427,641
Other descriptions .....			2,252,297	2,603,010
Machinery (not steam engines):				
Agricultural .....			406,075	460,659
Mining .....			271,058	359,999
Textile .....			2,043,227	2,150,822
Other descriptions .....			3,055,749	2,617,993
Electrical, of all kinds .....			.....	224,124

#### American and British Locomotives.

Two interesting items of news are to hand this week respecting British and American locomotives. The first is that the Canadian Pacific Railway Company, who some few months ago placed a contract with the North British Locomotive Company of Glasgow for no less than 32 heavy bogie express locomotives, have placed a further order with the same builders for 20 powerful compound locomotives of the well-known consolidation class. The Central Railway of Mexico has also placed a contract for a number of heavy locomotives of the Fairlie type with the same firm. These contracts were secured after close competition with American builders, and, as the locomotives are strictly of American design, an opportunity presents itself of seeing whether the admitted superior economy of operation and durability of British built engines is due to workmanship or design.

The second item of news is a report by an engineer who visited the Great Northern Railway Works at Doncaster recently. He says:

"In going through the shops a striking feature was the number of American engines under repair. Side by side with British locomotives, dated 1881 and earlier, were the engines from America built in January, 1900. And not light repairs were they in for; in fact, they were, practically, being rebuilt. In every stage of dismantlement they stood, a silent testimony to the British engineer. The tall tales and records of 95 miles an hour of our Yankee cousins are still on top, perhaps; but the Englishman still leads for locomotives." The writer also expresses his gratification at the absence of American machine tools. "With the exception of two or three lathes," he says, "all the rest bore the names of leading British makers."

These criticisms are, of course, with proper patriotic bias, but American engineers will do well to consider them.

#### A New Industry.

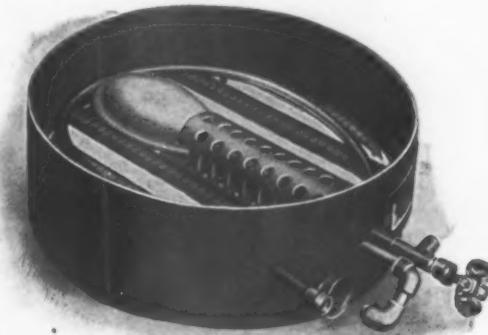
Mephan Fergusson of Australia has secured from the South Staffordshire Mond Gas Company, whose works are progressing rapidly, an order for mains of sufficient

magnitude to warrant him laying down a plant at Tipton for their manufacture. For this purpose 10 acres of land have been purchased from the Tipton Land Company, and the work of leveling the ground is now in active operation. Mephan Fergusson is the inventor of a peculiar type of pipe, which has been extensively used in Australia, notably at the Coolgardie Goldfields, where he supplied water mains over a distance of 300 miles. These pipes are constructed of steel plates bent into semicircular shape, having a kind of flange, to which a steel locking bar is attached by means of hydraulic pressure. Another feature of the pipes is that they can be made in much greater lengths than those of cast iron, necessitating less joints. A 36-inch pipe, such as will be principally required by the Mond Gas Company, will be made 28 feet long, whereas ordinary cast iron pipes of that diameter are usually restricted to about 9 feet. The site selected at Tipton is only a short distance away from the boundary of the Mond Gas Works, and is admirably situated, being close to two railroad systems and the canal. Mephan Fergusson has brought a plant and several skilled men from Australia. The present contract for the Mond Gas Company is for 13 miles of mains, but it is expected that many times this quantity will be ultimately required.

S. G. H.

#### The National Kerosene Oil Burner for Automobiles.

The National Oil Heating Company of Melrose, Mass., are putting a new kerosene oil burner on the market for use in automobiles. The burner is a simple one, no pip-



THE NATIONAL KEROSENE OIL BURNER FOR AUTOMOBILES.

ing to the boiler being required and no auxiliary vaporizing attachments being needed. One pipe from the pressure tank to the main burner and another from the pilot light tank to the pilot light are all that are necessary. After the pilot light has been running a few minutes the main burner is turned on gradually until the oil in the main vaporizer is well heated and vaporization established in the entire coil. It will then burn with an intense blue flame, making steam faster than gasoline. Pressure of from 100 to 160 pounds is kept on the main fire by means of the usual fuel pump and automatic diaphragm shut off. After the steam is up and the carriage is in operation the fire can be turned up or down, shut off or turned out just like any gasoline burner.

Negotiations for the sale of the property occupied by the Howe, Brown & Co. Works of the Crucible Steel Company of America in Pittsburgh to the Pennsylvania Railroad have been called off. The plant will probably be put in first-class condition and operated by the Crucible Steel Company.

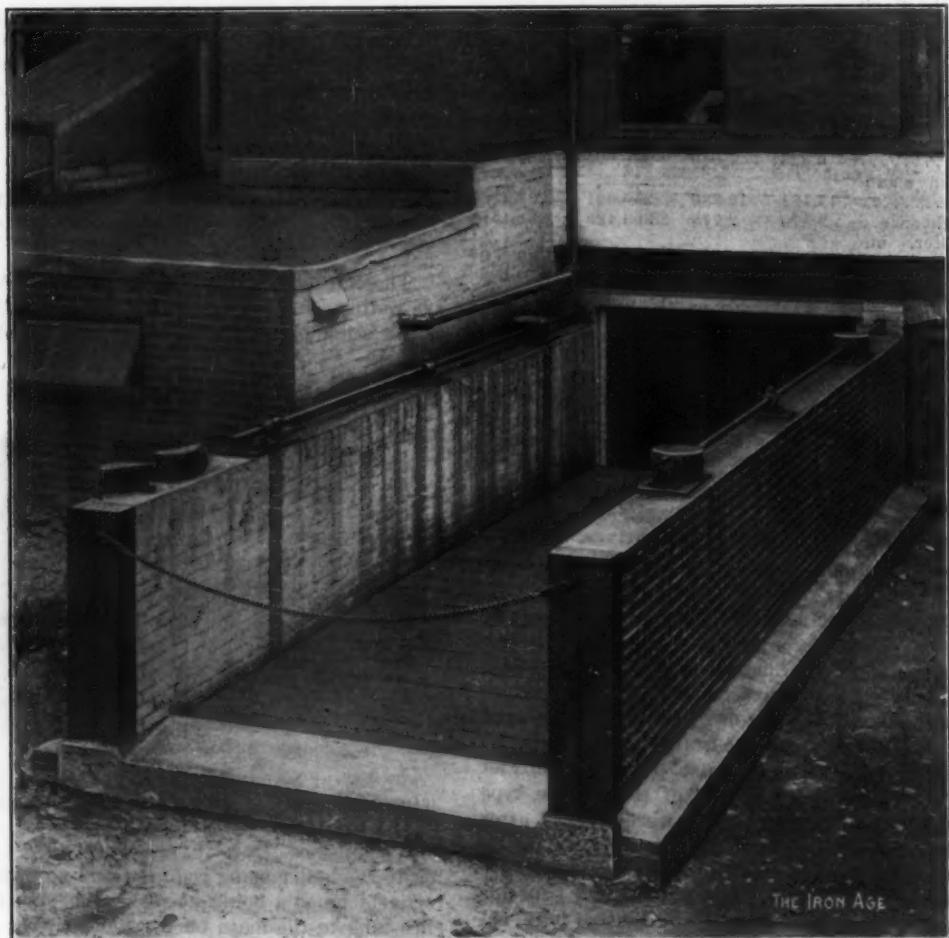
The Sharon Steel Hoop Company of Sharon, Pa., have signed the Amalgamated scale for their hoop mills. This plant has a very modern equipment, allowing a large output, and their rollers have agreed to accept a reduction in wages of about 17 per cent., and the heaters about 12 per cent. The roughers were not reduced.

### The Brownell Screw Elevator.

George L. Brownell, manufacturer of twisting machinery, at Worcester, Mass., has installed an elevator of his own design, which was built in his own machine shop on Union street. It is a simple mechanism, and commends itself for its purpose, which is a short lift for cumbersome machines, especially as its use is not frequent. In taking additional room for his business it became necessary to put in an elevator to lift the twisting machines, 21 feet long, from the basement floor to the level of the platform of a truck backed up in the shop yard. In other words, the lift is a little more than one story. Estimates for a plunger elevator showed that that type of lift would be expensive, because with such a length of car two plungers would be needed, and with two plungers the required exact adjustment of the valves

of the four screws is obtained. Each of the four beveled gears is attached to screws resting on ball bearings. This was necessary because the load rests directly upon these gears. With ball bearings the strain is borne without excessive friction. Each screw is 7 feet 1½ inches from the center transverse line of the car; in other words, each pair of screws is 14 feet 3 inches apart. The screws, which were procured outside the Brownell shop, are eight pitch and 1½ inches in diameter. Each works in a long phosphor bronze nut fastened in the car, and revolves at the rate of 250 turns a minute, which lifts the car a little more than 2½ feet a minute. The planking of the car rests on two longitudinal 10-inch I-beams and two pairs of 5-inch I-beams placed transversely. Each pair of 5-inch I-beams is set close together, tightly clutching the phosphor bronze nuts.

The elevator is situated in the open air. The screws



GENERAL VIEW OF THE BROWNELL SCREW ELEVATOR.

presented a somewhat complicated and consequently costly proposition. As the elevator must be out of doors the idea of a cable lift was out of the question. So Mr. Brownell decided to design and build an elevator himself, and as a result has applied the principle of the screw in a manner that has proved entirely successful after a sufficient trial. Severe tests, including a 7-ton load, were applied with no weakness developing in the mechanism, the only change made being that ball bearings were substituted for ground bearings in the seats of the beveled gears which bear the load.

The problem was to lift a car 22 feet long and 7½ feet wide a distance of 12 feet. Speed did not matter materially, because of the short distance and the infrequent use of the lift. The car is raised and lowered by means of four screws, set two on a side, in recesses in the masonry, as shown in the accompanying illustrations. Each screw is operated by a pair of beveled gears, shown in detail in Fig. 2. Each pair of screws is operated by a single shaft, and the two shafts are operated by one head shaft within the building, also by means of beveled gears. In this manner an absolutely uniform motion

are exposed but are kept from rusting by means of oil. The gears are protected by metal caps, shown in the general view, in which the car is at ground level. When a machine is to be loaded onto a truck the car is lifted still further to the level of the truck platform. As for the cost of operation of the elevator, it is very small. The pulley on the head shaft is not running excepting when the services of the lift are required, when the belt is thrown on.

The vagaries of alloys containing tin, copper and lead are perplexing, in that they do not follow any known law, and the causes which lead to failure are not easily detected. Condenser tubes for marine engines give a great deal of trouble from corrosion, so-called, for want of a more specific term; they pit and undergo changes of structure or stability whereby the several constituent metals are segregated, rendering them useless for their duty. It was thought at one time that this was due to the presence of acids from some unknown cause, but better information through experiment shows that this is not the source of the deterioration. So far as can be ascer-

tained it is now believed that the presence of lead in too great quantity is an evil, while tin acts to prevent premature decay in the presence of sea water. This trouble, however, is experienced with brass not in contact with anything; spring wire hung up in stores rots, so to call it, after a time so that it cannot be handled, even. This shows that decay is inherent in the composition itself, one metal acting upon the other to the ultimate destruction of the mass.

#### Amended Drawback Regulations Not Retroactive.

WASHINGTON, D. C., July 21, 1903.—The officials of the Treasury Department in charge of drawback matters, after careful consideration, have decided not to make retroactive the amendment to the drawback regulations recently promulgated, under which the Department waived the filing of an application for the fixing of a rate of allowance as a condition precedent to the making of a preliminary entry for export with benefit of drawback. This decision is of far reaching importance, affecting a large number of rejected applications and involving many thousands of dollars in duties paid on raw materials, which the Department is not willing to refund in the form of drawback.

It will be remembered that the Department some

#### May Sue for Drawbacks.

It has been suggested to the Department that drawbacks denied because of failure to file formal applications in advance of preliminary entries might be recovered through suits in the Court of Claims, and it is quite probable that this question will be determined by the bringing of a test case. It is generally conceded that the Secretary of the Treasury has ample authority to provide regulations for the allowance of drawback, and that if such regulations are reasonable they must be complied with by exporters before any right to drawback can accrue. In this connection, however, the exporters claim that they complied with the regulations as construed by the collectors of customs at certain ports at which drawbacks were allowed, and as construed by the Treasury Department in the amended regulations recently promulgated.

The difficulty, they aver, grows out of the ambiguous language employed in the original regulations, which provided simply that "no drawback shall be allowed on any article of domestic manufacture exported until the rate of allowance has been established by the Secretary of the Treasury." Certain collectors construed this to mean that no drawback should be paid before the rate of allowance was established, and this construction prevailed at the leading ports. It is urged with considerable force that if the Department's view concerning this regulation was entirely sound, it should have provided that no drawback should be allowed on any article exported "before the rate of allowance has been established" instead of "until the rate of allowance has been established." Whatever the merits of these contentions, there can be no doubt that exporters who claim to have complied with the regulations can bring suits for recovery without fear of encountering the objection that the law clothed the Secretary of the Treasury with power to provide regulations, thereby limiting the rights of exporters to recover drawback.

#### Few Rejected Cases Reconsidered.

The liberal views entertained by Secretary Shaw with regard to the administration of the drawback laws, taken in connection with a number of important changes in the personnel of the customs division in the Treasury Department, have encouraged a great many manufacturers whose applications for drawback regulations have heretofore been rejected to again present them to the Department in the hope that the present administration will review them and consent to establish the desired rates of allowance. Hundreds of old applications have thus been again submitted to the Department, but it can be stated that except in rare instances the original adverse decision has not been modified. In a few cases manufacturers have profited by the objections raised by the Department as the basis for the original rejections to so modify their processes as to bring their output within the scope of the law, which limits drawbacks to articles actually "manufactured" from imported materials. The Department finds it necessary almost daily to reject applications because the imported materials have not been subjected to sufficient manipulation to change their condition and constitute a manufacture. It occasionally happens, however, that a modification in the process, resulting in a slight change in the character of the finished product, obviates the objection and renders the goods eligible to drawback. It may therefore be said that while the Department has granted, upon review, applications heretofore rejected, there has usually been some good reason for the action taken aside from the mere tendency of the present administration of customs affairs to construe the drawback laws and regulations as liberally as possible.

W. L. C.

The projected Scotch malleable iron combine has broken down just when arrangements were completed with all but one firm. That firm were secured on a cash basis, but when the promoters wished to persuade these venders to take part shares for cash interests they "swore off" and the scheme failed. It was the project of a London syndicate supposed to be more or less in financial alliance with J. P. Morgan & Co.

## Iron Ore Matters.

DULUTH, Minn., July 19.—Iron ore shipments are smaller than last month from independent shippers and from old ranges. On the other hand, the United States Steel Corporation's Mesaba mines are very active and their ships are exceedingly busy. A new and very large shipper has been added to this company's properties, which is scheduled to produce before the close of the season about 1,000,000 tons of ore. Their older mines are not curtailing to the extent that new shippers increase business, and the conclusion is that the corporation is to produce heavily.

As a matter of fact, 1902 shipments from the lake were just about 5,900,000 tons too much—that is, that much more than was wanted. And the present season this extra weight on the market will have to be absorbed, either by lessened shipments to lower lakes or by increased consumption. Which of the two is more liable to occur is not the least doubtful, and it may surprise no one, therefore, if shipments are considerably curtailed later, and if even the biggest shippers are through unusually early. The situation does not seem one to tempt vessel men into new construction unless they control freights and have business at their disposal. In this connection a recent rumor that a fleet of steel ships, each 550 feet long, is to be built at the yards of the American Shipbuilding Company is of interest. Nothing can be ascertained as to this project at the office of A. B. Wolvin in this city, who is mentioned as at the head of the enterprise, but from what Mr. Wolvin has said to your correspondent on this subject in the past it is not probable that these ships are to be constructed at once.

### A Cargo Record.

Lake records for cargoes have again been broken by the Pittsburg Steamship Company, a subsidiary company of the United States Steel Corporation. Their 500-foot steamship, "Wm. Edenborn," took a cargo from the docks of the Duluth, Missabe & Northern road in this city on Friday containing 7785 gross, or 8720 net tons. This exceeds this ship's previous records by 56 gross tons. The new "D. G. Kerr," owned by the Provident Steamship Company, and just launched, took her initial cargo from Duluth this morning, consisting of 7509 gross tons. The "Kerr" is 30 feet shorter than the "Edenborn."

### Mesaba Range.

Two important mines are to be opened on the Mesaba range at once. One is for the United States Steel Corporation, coming to that company through a purchase recently concluded—a purchase among the most important ever made by the corporation's mining department, but not yet announceable. Bids have been called for a large stripping contract for this mine. It is a large property and a very wet one, situated near Hibbing. The other new mine is a small property, containing so far as now opened not over 1,000,000 tons, but of a magnificent grade of ore, high in iron, low in phosphorus and coarse in structure. This mine has been discovered by Duluth men on lands belonging to the Williams estate, and lies in section 4—58—16, a mile west of Biwabik. There are about 35 feet of surface and the property will be opened as a milling proposition. It is interesting and instructive to know that, prior to the present explorations on this land at least \$50,000 had been spent in punching holes and sinking shafts on the same 80-acre tract. Part of this work was in the early days of the Mesaba, and part immediately before the present lessees took hold. I do not know what figures of stripping and mining costs the present owners have in mind, but their stripping probably should not cost to exceed 15 cents a ton for the ore it will uncover, and their mining by the milling process should come inside 20 cents more. Their royalties amount to 25 cents a ton. Some low stripping costs have been made during the past few months, Biwabik itself having moved an immense amount of earth and boulders, not exceptionally accessible, at about 25 cents a yard.

Mesaba ore is moving to Canadian furnaces to some extent; several cargoes have gone the past week to Midland for the Canada Iron Furnace Company.

What has been called the Flynn mine, adjoining Hibbing, has been sold to the Steel Corporation. It is a property of some 3,000,000 tons, of rather low grade ore, and the royalty is 35 cents a ton, but it is a State lease, and that is an important factor. The Steel Corporation has commenced shipments from its new Burt mine at Hibbing. This was a small underground property until now, but last fall immense stripping contracts were undertaken and the open pit is now accommodating two shovels day and night in mining. The product for the season is to be 1,000,000 tons. Part of this will come off a State lease adjoining and included in the same operation. Mountain Iron, Fayal and other large shippers are moving about as usual.

In the Hibbing district the United States Steel Corporation's mines number 11, with one more to be developed immediately. These include the Burt and Morris open pit mines, the Hull, Rust, Day, Sellers, Pillsbury, Clark and Chisholm, underground, and the St. Clair, also underground, and until very recently the property of the Oliver-Snyder interests, operated under a contract by the Minnesota Iron Company. The recent Clairton Steel purchase affects this latter mine.

### Other Ranges.

On August 1 the Wisconsin & Michigan road will install regular ore train service from Menominee range points to Peshtigo, on Green Bay, whence car ferries will be utilized to convey trains to Chicago. This is a new scheme for long distance railway travel, though car ferries have been in use many years across Lakes Michigan and Erie. Their development on these short runs has been of such a satisfactory character that the Wisconsin & Michigan road determined a year or two ago to utilize the same plan for entering Chicago. Its lake harbor is Peshtigo, which is 260 miles by water from Chicago. These car ferries are large, seaworthy ships of steel, capable of holding loaded cars the full length of the vessel in three parallel tracks. These trains are run in on the lower decks, and the sides of the ships are so built that, once in, the cars are completely enclosed. The outcome of this experiment in traffic will be watched with interest, for if car ferries can be utilized for a distance of 260 miles they may be economical for much greater courses, especially if land terminals are costly.

The Penn Iron Mining Company (Cambria Steel Company) will improve Sturgeon River, and are planning to expend \$500,000 there for power. Current derived from this power will be used to operate four of the company's mines near Norway. The Oliver Iron Mining Company are spending \$100,000 in improvements at their water-power of Quinnesec Falls, which is now used at Chapin mine. With the completion of these improvements much additional machinery will be placed in the Chapin.

Explorations have commenced west of Little Lake, Marquette County, by the Cleveland Cliffs Company, and some of these have demonstrated the existence of ore in considerable quantity. This section has not been explored up to this time, and the discovery of ore in any large quantity would be of the utmost importance. W. P. Snyder & Co., are also exploring there, and others are preparing to go in shortly. The Cleveland Cliffs Company have been buying much land in that section and seem to have confidence in its value.

Helen mine shipments this year will probably reach 400,000 tons. I get it on the authority of the Consolidated Lake Superior Company's superintendent of mines that a diamond drill has been in excellent ore for a distance of 107 feet below the bottom of the opened mine, and that lower levels are widening out materially. Also that the company have developed by drills 125,000 tons of high-grade pyrites running 42 to 48 per cent. in the bottom of Boyer lake, which they will mine and sell. They expect to increase their tonnage of pyrites materially with additional development. D. E. W.

Experiments made at Purdue University go to show that ordinary ball bearings are quite unsuitable for high surface velocities; it is also stated that the coefficients of friction are but slightly lower than that of highly polished steel bearings running in brass boxes.

## What Canada Pays in Bounties.

TORONTO, July 18, 1903.—A member of the House of Commons has asked how much money had been paid out in bounties on iron and steel in the fiscal year ending with last month, and to what producers the money had been paid. To this the Finance Minister replied that the accounts for the year were not yet closed, but so far as the information at the disposal of his department went he could say that \$1,245,382 had been paid out. Of this sum \$147,022 was deferred from the previous year. The Minister did not say so, but probably much of this latter amount was brought over pending the settlement of the dispute with the Dominion Iron & Steel Company. He gave the following statement as to the apportionment of the \$1,245,382:

For pig iron:	
Dominion Iron & Steel Company	\$386,338
Hamilton Steel & Iron Company	90,915
Nova Scotia Steel & Coal Company	88,974
Canada Iron Furnace Company	87,472
John MacDougall & Co.	4,598
Deseronto Iron Company	12,409
Total.	\$620,706
For steel ingots:	
Dominion Iron & Steel Company	\$499,625
Hamilton Steel & Iron Company	36,792
Nova Scotia Steel & Coal Company	79,852
Total.	\$616,269
For puddled iron bars:	
Hamilton Steel & Iron Company	\$8,407

Thus the total sums received by the companies were as follows:

Dominion Iron & Steel Company	\$885,963
Hamilton Steel & Iron Company	136,114
Nova Scotia Steel & Coal Company	168,826
Canada Iron Furnace Company	37,472
John MacDougall & Co.	4,598
Deseronto Iron Company	12,409
Total.	\$1,245,382

In the current fiscal year the aggregate on bounty account is likely to be far in excess even of this considerable sum, for now there are to be added bounty payments for the output of wire rods, 30-inch plates and structural material, as it is to be supposed that production in all these lines will at least have been begun within the next 12 months. The steel companies have a motive now to proceed to the manufacture of products beyond the billet. They have bounties on the rods, plates and structural forms and a duty on rails, the condition as to the latter being that enough of them of the right quality shall be produced. It seems therefore safe to assume that rolling mills will be hurried to completion and the work of converting steel into the products whose manufacture is henceforth to be assisted will not be long delayed. Especially on account of the activity in the Canadian demand for rails is the work of establishing rolling mills likely to be pushed forward.

This very month it was expected that the works at Sault Ste. Marie would be turning out rails, and that expectation may yet be fulfilled. Mr. Cheyne stated less than a fortnight ago that the rail mills will be producing 150,000 tons a day by the end of this month. Certainly such an output should in point of quantity qualify the company for the protection of \$7 a ton that is conditionally prescribed. As to quality, such of the rails on hand as were produced before the works closed down last December appear to be up to the standard. That, at all events, is reported to have been the judgment of a Chicago expert who examined them a short time ago.

The Cramp Steel Company, whose works at Collingwood, Ont., are now about ready for productive operation, will also benefit by the new bounties, especially on those for wire rods. When the finishing mills were designed they were planned so that wire rods could be rolled as well as bars. A good portion of the company's output will, it is said, be in the form of rods. The company will be benefited by the starting up on land adjoining their works of a wire drawing plant for the Imperial Steel & Wire Company, which plant is to have a daily capacity of 50 tons. This company, who will buy rods from the Cramp Steel Company, will be in an advantageous position on an upper lake port to distribute their wire in the growing market of the Canadian Northwest.

It would not be surprising, therefore, if the total amount paid out the current year in bounties on iron and steel would be much greater in the aggregate than \$1,250,-

000 to which they amounted last year. They are to be the same per ton on pig iron and steel billets as they were in 1902-03, not scaling down this year, as the act of 1899 provided. And to them are to be added new bounties for rolled products. We should expect a bigger output of steel, if for nothing else than to earn the duty on steel rails.

A while ago the people of Canada would have thought the distribution of \$1,250,000 to the iron and steel makers an outrage. But the revenue is mounting up. There was a surplus of \$12,000,000 at the end of the fiscal year, and this is largely the return of customs duties that are lower than those ruling prior to 1897.

### SLOW DEVELOPMENT OF CANADIAN ORE FIELDS.

A question often asked is "Will the original purpose of the bounties be effected—namely, that of causing Canadian ore bodies to be developed?" That was the purpose had in view by Mr. Foster, the Finance Minister, who introduced the first Bounty act in 1894. He believed that the ore bodies on which the Nova Scotia Steel Company and the Liverpool Iron Company at that time depended for their raw material yielded the necessary grades. But not until the better ore of Belle Isle, Newfoundland, became available did the development take place that was contemplated by the Government. And that superior ore would not have proved of so much advantage had the bounty law not been modified, first by Mr. Foster and afterward still more by Mr. Fielding, so as to admit the Canadian product of Newfoundland ore to the benefit of the bounties. Of course, it would not do to treat the Nova Scotia iron and steel makers differently from those of Ontario. Consequently the bounty law was amended so as to cover the Canadian product, whatever source the ore came from. That was for the reason that the Hamilton Company found it necessary to import ore from Minnesota. At the present time the difference in the bounty paid for the pig iron product of Canadian ore and the pig iron product of imported ore is 90 cents a ton. It was the same last year, and for five years previous it was \$1 a ton. But it failed to stimulate prospecting sufficiently to bring about the discovery of great deposits of high grade iron ore in Canada.

### MINOR NOTES.

The Wire & Cable Company, Limited, Montreal, are to enlarge their works by an extension covering at least as much ground as that occupied by their existing buildings. This is to meet a demand that has already outgrown the capacity of the company's present plant. The new wire works are to be ready for operation in October, and the new cable works at the beginning of next year. The company's output is purchased principally by the Bell Telephone Company, the Canadian General Electric Company and the electric light, power and tramway companies of the country.

Efforts to break the strike of their molders are being made by the Canadian Foundry Company, Toronto. Men from England, Scotland and the United States have been brought to the works. In spite of the fact that the employed hands are kept on the premises, where they are lodged and hoarded in tents and in temporary buildings and that police are guarding the plant, the union influence is strongly exerted, and newcomers are in many cases induced to go out or not to go to work at all. The company are determined to be the masters of their own business.

Mr. Plummer, a director of the Dominion Iron & Steel Company, emphatically denies that they are about to amalgamate with the Nova Scotia Steel & Coal Company.

The Canadian Pacific Railway Company bought some locomotives recently in Glasgow. That order is not to be wholly credited to Canada's tariff preference in favor of Great Britain, as Mr. Chamberlain seems to think. The Canadian Pacific, as stated by its general manager a short time ago, is having locomotives made wherever it can get them turned out the most rapidly, its main object being not to buy them at the very lowest price, but to get in readiness for the grain movement, for which its motive power was so inadequate last year. Canada's shops are crowded with orders, and those of the United States do not appear to be able to furnish engines fast enough for the Canadian Pacific Railway.

C. A. C. J.

### The Balance Lever as a Calculating Machine.

BY ULRICH PETERS, WILKINSBURG, PA.

In laying out passes for mill rolls it is generally desirable to know the exact area of each pass, as well as the reduction, elongation, length and weight per foot of the material before entering or leaving a certain pass. These computations may be performed without the aid of a planimeter by means of the simple balance lever herewith illustrated. Another practical application of the lever is for the accurate and convenient figuring of cubical contents and weights of solids of revolutions, like gears, mill rolls, table rollers, &c.

The double armed lever is made of light wood about 32 inches long and  $\frac{1}{4}$  inch thick by  $\frac{5}{8}$  inch wide, and is fitted up in the manner shown in the sketch. The lever is carefully balanced and the center of gravity of the complete beam is so adjusted that it is slightly below the point of support at the needles, thus insuring a very sensitive balance. For convenience in manipulation the beam is graduated into tenths of inches to the right and left from the fulcrum needles. On the other side of the beam ends are shown two pins inserted at the distances of 10 and 3.36 inches.

The area of the shape section to be figured is cut from thick transparent paper, the round balancing or weighing disks being also cut from the same paper. The size of the latter represents an area of either 1, 10 or 100 square inches, cut to the same scale as the shape

Assuming that the cubical contents of an ingot or a billet is not changed after passing through the various deformations in the roll passes, then we have the length,  $l$ , of the unfinished or finished shape of the known area,  $a$ , by the formula:

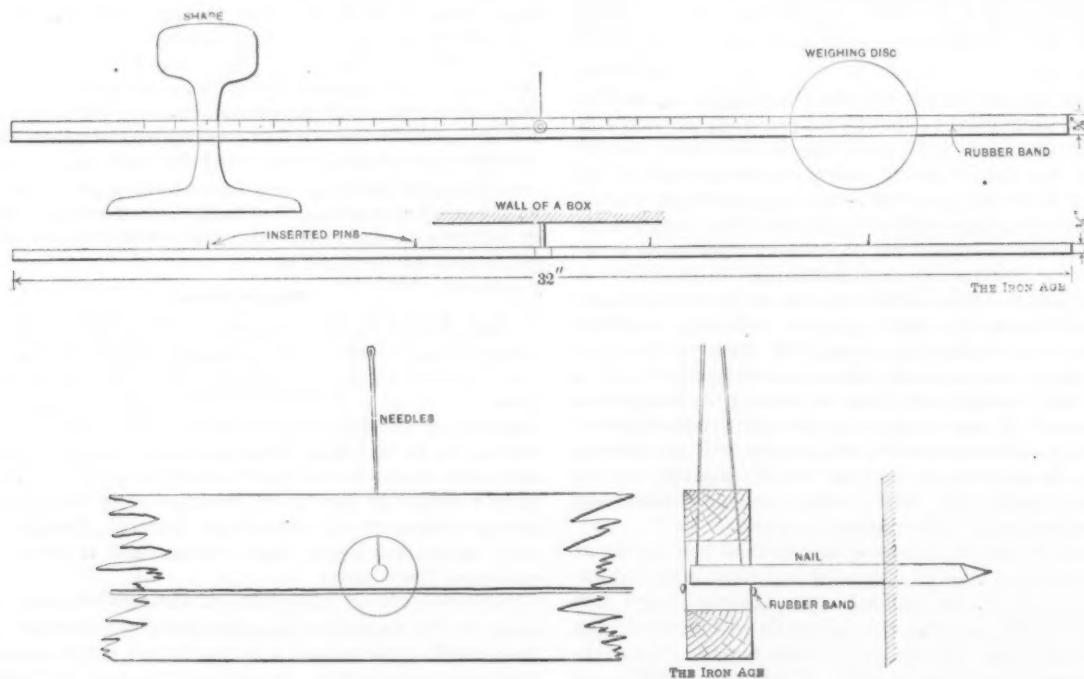
If we place the center of gravity of the billet area,  $A$ , on a lever length representing its length,  $L$ , between the rubber bands, and balance it with the shape  $a$ , we obtain the required length,  $l$ , by measuring or reading off the lever distance to the center of gravity of shape  $a$ .

To find the center of gravity of any irregular shape I use the following method: From a pin driven into a wall on which a vertical line is marked suspend the shape on two different corners at about 90 degrees, and mark on same each time the vertical line, which are axes through the center of gravity. The intersection of the two axes is the center of gravity in the shape.

When the area of a bar section before entering a pass is expressed by  $A$ , and after leaving the pass by  $a$ , the reduction,  $R$ , in per cent. is as follows:

$$R = \frac{A - a}{A} \cdot 100$$

To compute the reduction by means of the balance we suspend the section *A* on a pin at the distance of 10 inches on one arm and the section *a*, together with a piece of paper, at the same distance on the other arm of the beam, and balance both sides by gradually clipping off



section. For instance, the shape sections for the passes are cut from a full size drawing, then the size of balance disk is taken—either:

1.128 inches in diameter equals 1 square inch.

3.568 inches in diameter equals 10 square inches.

or 11.283 inches in diameter equals 100 square inches.   
 whichever disk may be found most convenient to use.

To find the area of the snake it is suspended anywhere on one of the projecting pins at the distance of 10 inches, and one of the weighing disks is shifted along between the rubber band on the other arm of the beam until the whole system is balanced. We then have: Area of shape multiplied by lever equals area of disk multiplied by lever, or:

$$\text{Area of shape} = \frac{10 \times \text{lever}}{10} = \text{lever.}$$

We read the area of shape directly from the lever length of disk, when a balance disk of 10 square inches is used. Should a disk of 1 or 100 square units be used, it would mean only a simple application of the decimal point in reading off the lever length.

from the piece of paper referred to a strip. This paper strip represents finally the difference,  $A - a$ , of areas. Now, if we take  $a$  off the lever and balance the strip with  $A$ , by sliding it between the rubber bands we obtain as the reduction,  $R$ , the lever length to the center of gravity of  $A$ , read in tenths of an inch.

The elongation  $E$  in per cent. is determined from the formula:

$$E = \frac{l-L}{L} \cdot 100$$

In this  $l$  represents the length of the shape  $a$  after leaving a pass, and  $L$  the length for the shape  $A$  before entering the pass. The above formula is not very suitable for application on the balance, and if we transform

it by substituting from formula 1 for  $l = \frac{AL}{a}$  to:

$$E = \frac{A - a}{a} \cdot 100$$

we see from this formula that the manipulations with the beam are similar to that for finding the reduction, only that we must balance the strip of paper representing

*A* — *a* with the shape *a* and read *R* as elongation, *E*. The weight per cubic inch being 0.28 pound for steel, then the weight, *W*, per foot of a bar, beam or rail with the sectional area *A* is:

$$W = A \times 12 \times 0.28 = 3.36 A.$$

To read this from the beam, we suspend section *A* on the pin at the 3.36 inch distance from point of support, and balance it with a paper disk of 1, 10 or 100 square inches. The lever length on the disk side then represents the weight per foot by applying the decimal point properly.

We have seen in the above how to find the area and center of gravity, and as the cubical contents of a solid generated by a plane revolving around an axis is equal to the area of the plane multiplied by the circumference of its center of gravity, it remains only to demonstrate how to compute the cubical contents by means of our balance lever. If we again call the area of the generating plane, equals *A*, and the distance from the axis to the center of gravity of the plane equals *S*, then we have as cubical contents:

$$C = A 2 \pi S.$$

The cubical contents, *C*, is read as the distance from the point of support to the weighing disk center, if we attach *A* at the distance of *S* inches and balance it with a disk of  $\frac{1}{2\pi}$ ;  $\frac{10}{2\pi}$  or  $\frac{100}{2\pi}$  square inches area.

Calling the weight per cubic inch equals *e*, then the weight of solids of revolutions is:

$$W = A 2 \pi S e.$$

We can read the weight as length on the same lever arm if the former area, *A*, was balanced with disks of either  $\frac{1}{2\pi e}$ ;  $\frac{10}{2\pi e}$  or  $\frac{100}{2\pi e}$  square inches area.

For steel, for instance, *e* is 0.28 pound, and the respective disk diameters are then from:

$$\frac{1}{2\pi e} = \frac{\pi d^2}{4}$$

$$d_1 = \sqrt{\frac{2}{\pi^2 e}} = 0.851 \text{ inch.}$$

$$d_2 = \sqrt{\frac{20}{\pi^2 e}} = 2.69 \text{ inches.}$$

$$d_3 = \sqrt{\frac{200}{\pi^2 e}} = 8.51 \text{ inches.}$$

When there are ribs, holes or recesses in wheels, gears or rolls they must be figured separately and added or subtracted from the weight of body found by the balance. It requires some practice to apply the balance lever to advantage with a toleration of not over 1 per cent. Then it will be found to be the quickest and easiest method for demonstration and designing.

**Navy Subsidies to English Merchantmen.**—Our Glasgow correspondent writes under date of July 9: "Two items of great interest to our shipping circles here have emerged in Parliament within the last few days. The one is the announcement of the Admiralty that the subventions (erroneously called subsidies) hitherto granted to certain merchant steamers, to be held in a state of equipment defined by and at the command of the Admiralty for naval purposes, shall be discontinued after present contracts run out. These subventions have not been universally approved, and even if they were worth the money in the past (a point which is disputed) they have given rise to an erroneous impression on your side, repeated ad nauseam, that British shipping owed its well being to Government aid. If for no other reason than the existence of this fallacy, many of us will be glad to see the end of these subventions. If they were ever needed they are not needed now when the Admiralty have in the navy vessels as swift as any in the merchant marine. The subventions will end next year, and the Morgan combine will lose the £28,000 per annum, which it is at present drawing for the White Star boats scheduled as merchant cruisers. The other item is the naval vote in the House of Commons, involving a sum for the payment of the land and construction of the preliminary works and plant for the new naval base, which is to be established on the Firth of Forth. As stated above, contracts for

some of the buildings have already been placed here. Once started the creation of this establishment will involve a large amount of industrial work and a large employment of labor, and when completed it will form a new consuming community. The construction of a ship canal from this naval base to the Clyde is a matter for consideration."

### EASTERN YARDS MACHINERY BIDS.

The following bids for supplies for the Eastern yards were opened July 14 at the Bureau of Supplies and Accounts, Navy Department, Washington:

1. Whiting Foundry Machine Company, Harvey, Ill.
2. Brown & Sharpe Mfg. Company, Providence, R. I.
3. Bashlin Company, Warren, Pa.
4. Crocker-Wheeler Company, Ampere, N. J.
5. Thresher Electric Company, New York.
6. Fairbanks Company, New York.
7. Pawling & Harnischfeger, Milwaukee, Wis.
8. Marshall T. Davidson, Brooklyn, N. Y.
9. Wheeler Condenser & Engineering Company, New York.
10. Alliance Machine Company, Alliance, Ohio.
11. American Hoisting Derrick Company, St. Paul, Minn.
12. Alfred Box Company, Philadelphia, Pa.
13. Bullock Electric Mfg. Company, Cincinnati, Ohio.
14. American Tool Works Company, Cincinnati, Ohio.
15. Cleveland Crane & Car Company, Wickliffe, Ohio.
16. Niles Tool Works Company, Hamilton, Ohio.
17. Libby Mfg. Company, New York.
18. George F. Blake Mfg. Company, New York.
19. Drew Machinery Agency, Manchester, N. H.
20. Northern Engineering Works, Detroit, Mich.
21. Holtzer-Cabot Electric Company, Boston, Mass.
22. Henry R. Worthington, New York.
23. Hyde Windlass Company, Bath, Maine.
24. American Ship Windlass Company, Providence, R. I.
25. Lidgerwood Mfg. Company, New York.
26. Manhattan Supply Company, New York.
27. Lunkenheimer Company, Cincinnati, Ohio.
28. General Electric Company, Schenectady, N. Y.
29. Hendey Machine Company, Torrington, Conn.
30. Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.
31. Manning, Maxwell & Moore, New York.
32. Charles E. Peabody, New York.
33. Stilwell-Bierce & Smith-Valle Company, Dayton, Ohio.
34. Prentiss Tool & Supply Company, New York.
35. Williamson Bros. Company, Philadelphia, Pa.
36. Queen City Brass & Iron Works, Cincinnati, Ohio.
37. North Penn Iron Company, Philadelphia, Pa.
- Class 1. One  $7\frac{1}{2}$  and two 5 horse-power electric motors.—Bidder 19, \$590; 5, \$640; 28, \$696; 21, \$720; 30, \$880; 4, \$919.
- Class 2. One 15 and one 25 horse-power electric motor.—Bidder 19, \$840; 21, \$1106; 5, \$1120; 30, \$1188; 28, \$1709.
- Class 3. Four 35, eight 15, 26 3, four 4, one 8, two 50, two 30 horse-power electric motors, and six hoists.—Bidder 5, \$30,950; 28, \$33,249; 21, \$35,600.
- Class 4. Three horse-power electric motor.—Bidder 4, \$154; 5, \$160; 30, \$160; 28, \$170; 21, \$185.
- Class 5. Ten horse-power electric motor.—Bidder 5, \$219; 28, \$246; 4, \$248; 19, \$254.50; 30, \$280; 21, \$284.
- Class 6. Surface condenser with 500 square feet cooling surface.—Bidder 22, \$995; 19, \$1285 and \$2107; 33, \$1100; 9, \$1698.
- Class 7. One 72-inch radial drill.—Bidder 6, \$545; 34, \$745; 31, \$762; 14, \$775; 16, \$1235 and \$1310.
- Class 8. One 5-ton, one 1-ton and two 3-ton jib cranes.—Bidder 8, \$1375; 20, \$2037; 15, \$2225; 1, \$3100; 12, \$4075; 10, \$4575.
- Class 9. Eight-ton, 17-ton and 4-ton electric traveling cranes.—Bidder 15, \$7005; 20, \$8820; 12, \$8900; 10, \$9063; 1, \$9500; 7, \$10,700; 16, \$11,000 and \$12,000; 37, \$13,150.
- Class 10. One 3 and one 4 horse-power buffing and polishing lathes.—Bidder 16, \$407.
- Class 11. One 24-inch screw cutting engine lathe, motor driven, with 14-foot bed.—Bidder 6, \$1020; 31, \$1195; 29, \$1200.
- Class 12. One 20-inch hollow spindle pattern makers' lathe, motor driven, with 10-foot bed.—No bids.
- Class 13. New model turret lathe for 1-inch stock.—Bidder 2, \$534.25; 10, \$585.
- Class 14. Spinning lathe with 24-inch swing, 60-inch bed.—Bidder 19, \$448; 31, \$475.
- Class 15. Automatic screw machine, multiple spindle, 1½-inch chuck and one set of tools.—Bidder 16, \$1265; 34, \$2133.
- Class 16. Milling machine.—Bidder 29, \$515; 16, \$665; 31, \$850; 2, \$1054 and \$1104; 19, \$1127 and \$1180.
- Class 17. Universal grinding machine, 10-inch swing.—Bidder 16, \$898.
- Class 18. Power plant consisting of 117 horse-power engine, 75-kw. generator, rotary converter and accessories.—Bidder 30, \$5286; 13, \$6643.10.
- Class 19. Sensitive three-spindle drill press.—Bidder 16, \$166.
- Class 20. Feed pump, capacity 400 gallons per minute, compound type.—Bidder 19, \$2350; 18, \$2380 and \$2746.
- Class 21. Vertical steam pump, capacity 22 gallons per minute.—Bidder 18, \$190; 19, \$200.
- Class 22. Pressure regulator.—No bids.

Class 23. Centrifugal steam separator and grease extractor.—No bids.  
 Class 24. Two 26-inch shapers, motor driven, quick return stroke.—Bidder 31, \$1200.  
 Class 25. High pressure non-return steam trap.—No bids.  
 Class 26. Six electrically driven deck winches.—Bidder 5, \$9680; 23, \$10,300; 25, \$11,666; 35, \$13,250; 24, \$13,500.  
 Class 27. Holsting engine, cylinders 7 inches in diameter, 10-inch stroke.—Bidder 11, \$1070; 25, \$1095.  
 Classes 28, 29 and 30, valves, angles, &c.

### The Cincinnati Drill Press with Compound Table.

A short time ago the Cincinnati Machine Tool Company of Cincinnati, Ohio, placed a new model of drill

justment. Should the parts become a little worn at any time the jib can be removed and a light cut taken off of the small projection marked X in Fig. 2, whereupon the jig can be replaced with accuracy.

The new geared tapping attachment shown in Fig. 1 contains features of unusual interest. It can be placed on the standard type of drill press at comparatively little expense when ordered with the machine. As will be noted by Fig. 1, its construction is very simple, being a self contained mechanism which can be engaged or disengaged at will by means of the lever hanging parallel with the spindle of the machine. The movement of this lever simply operates a clutch which engages the spindle with either train of gearing, rotating the spindle in either direction or allowing it to remain free, even though the ma-

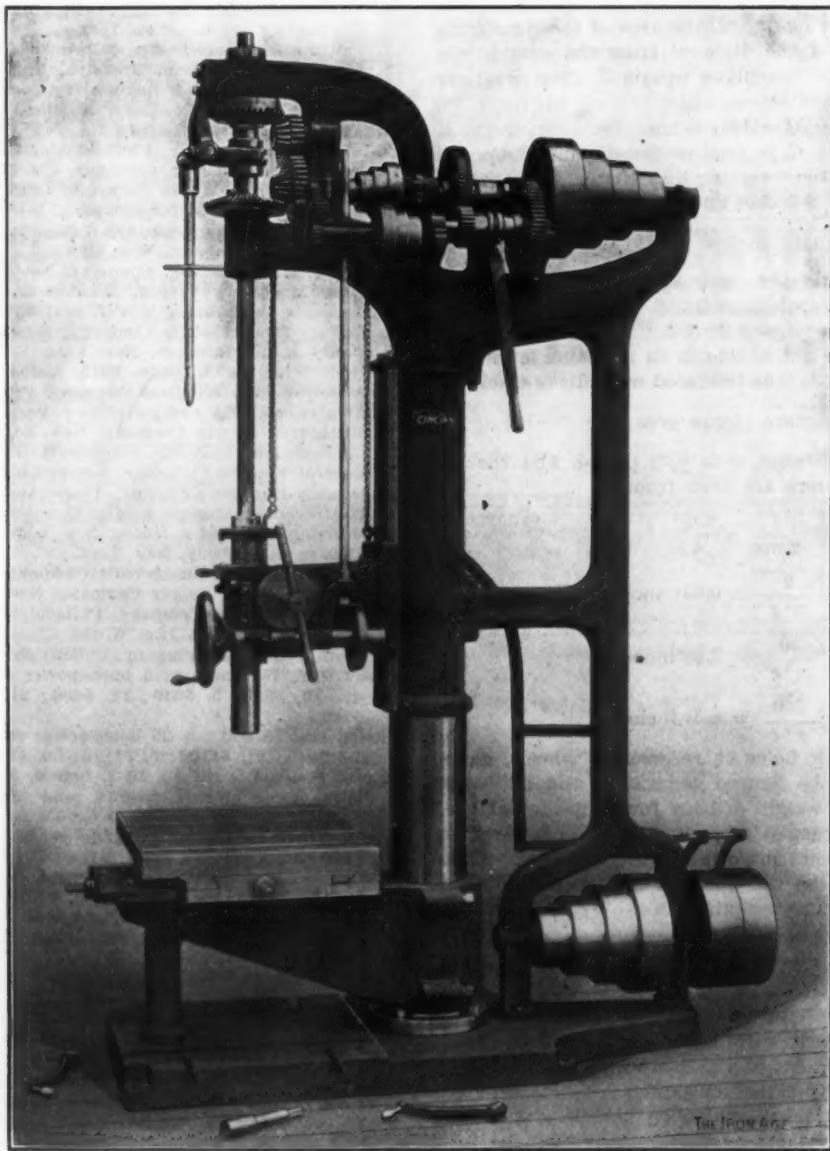


Fig. 1.—General View.

#### THE CINCINNATI DRILL PRESS WITH COMPOUND TABLE.

press and tapping attachment on the market. They have just added to this machine a new compound table which contains a good, simple gib arrangement.

The general appearance of this table fitted to a 28-inch drill press is shown in Fig. 1. In Fig. 2 the details of the table are shown. The gib is shown in both engravings, being marked X in Fig. 2. The jib in this case is attached to the saddle instead of the table, as has heretofore been the usual practice. Placing it on the saddle prevents its hanging over the end when the table is moved for any considerable distance in either direction.

In the design of this saddle the table is allowed to be moved in either direction far enough to enable the operator to get at the jib screws whenever they require ad-

justment. Should the parts become a little worn at any time the jib can be removed and a light cut taken off of the small projection marked X in Fig. 2, whereupon the jig can be replaced with accuracy.

The machine contains automatic stop, depth gauge and the other features of a strictly modern machine.

**Southern Car & Foundry Receivership.**—On allegations that the Southern Car & Foundry Company of Birmingham, Ala., have practically no working capital, and

that they will be unable to meet obligations maturing in August, Thomas A. Gillespie of East Orange, N. J., has been appointed receiver for the company by Judge Kirkpatrick in the United States Circuit Court. The receiver was sought by the Standard Steel Car Company of Pittsburgh, who own a controlling interest in the Southern Company. In round numbers the indebtedness is placed at \$2,300,000, of which, it is declared, at least \$150,000 is now due. The company have a capital stock of \$3,500,000 and operate rolling mills at Anniston, Ala.; car building works at Anniston, Ensley and Gadsden, Ala., and Lenoir City and Memphis, Tenn.; car wheel works at Memphis, Tenn., and car axle works at Anniston, Ala. The products are freight and passenger cars, wheels, axles, bar iron and castings.

#### Latest Facts Concerning Oil Fuel.

The manifest superiority of petroleum as fuel for manufacturing purposes, both as regards its calorific value and ease in handling it, have led many to install it as a permanency, relying upon a reasonably stable mar-

prohibitive price so far as fuel is concerned. In California and Texas, however, the case is reversed, for coal costs \$5.25 per ton, while Professor Williston places the cost of oil at 55 cents per barrel, the latter not included, possibly; in any aspect of the matter, 42 gallons of oil for 55 cents seems anomalous, and it is asserted in press dispatches that the use of oil fuel is being discontinued in Southern factories by reason of the advance in price. From this showing it is not prudent to rely upon it for manufacturing purposes, and it seems impossible that the production of oil should ever render it a practical or formidable competitor of coal. No doubt oil will be discovered in many places in the future, even in large quantities, but it must be borne in mind that manufactures are constantly increasing, so that the demand will fully keep pace with the supply. In 1901 Professor Williston says that the total output of petroleum in the United States was 69,389,000 barrels; enough to generate 3,000,000 horse-power during ten hours for 365 days in the year, and he adds that the greater part of this is necessary for illuminating and lubricating oils, not to mention other products of petroleum, such as naphtha and gasoline, so

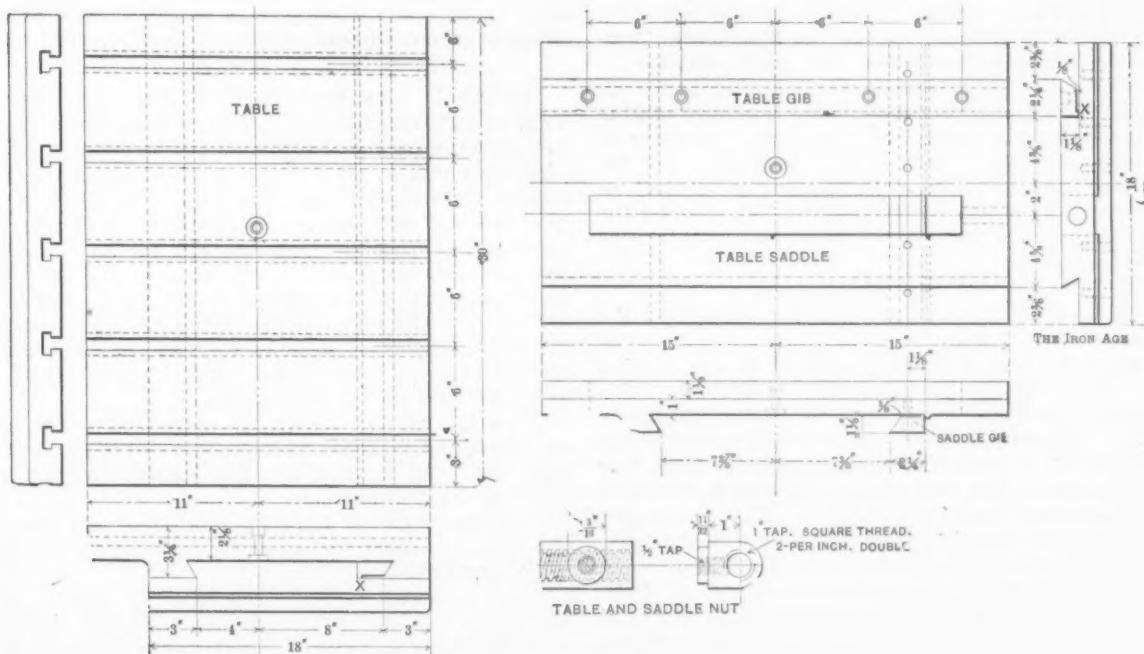


Fig. 2.—Details of the Compound Table.

#### THE CINCINNATI DRILL PRESS WITH COMPOUND TABLE.

ket price as compared with coal. In this expectation they have been much disappointed, for oil is only cheap fuel when it is at a very low price. The recent development of new oil fields in Texas and California gave rise to hopes that inexhaustible supplies had been opened, and that it would be in the nature of a drug in the market, but although there was plenty of oil at low prices when the wells were first drilled, the demand for it has raised the price so that in this vicinity, at least, it is no longer able to compete with coal at a low price. Prof. Arthur L. Williston, director of the Pratt Institute, has given the subject of oil fuel close attention, and in an article in *The Engineering Magazine* gives data for comparison of the two fuels which is both interesting and valuable to those interested in economical management of steam plants, for he considers every aspect of the subject, not the mere cost of each commodity. It appears from Professor Williston's deductions that buckwheat coal at \$2.85 (including removal of ashes and firing \$3.23) equals 3.6 barrels of oil at \$1.47 per barrel (including steam for burners and repairs, net cost of oil is \$5.48 in New York City), as against \$3.23 for coal. But his is wholly misleading in view of the advance in oil, doubtless since the article was written. Oil is now quoted at 14 cents per gallon in New York City, which at 42 gallons per barrel would bring it to \$5.88 per barrel, a

that only a small part of the total product is available for fuel. It is definitely established that oil possesses qualities which make it an ideal fuel, but only, however, when it can be put in market at exceedingly low prices, which last are "liable to change without notice," as price-lists say. Its extraordinary calorific value as compared with coal (15 to 8, respectively) will be a constant temptation to many to install it, but it seems to be too unstable in price to warrant extensive changes in plants.

#### German Export Prices for Iron.

Consul-General Richard Guenther, writing from Frankfort, Germany, reports dissatisfaction among German consumers of iron who are subjected to keen competition from foreigners favored with German iron at cheaper prices. He says: "German papers report that an English firm has been awarded the contract for a large gasometer by the city of Copenhagen, being the lowest bidder—£10,930 (\$53,185); the lowest German bid was £11,250 (\$54,742). The curious part is that the English firm intend to use German material, finishing it in England. It will be bought in Germany at export prices, which are about cost or even less. The papers state that the German manufacturers of gas reservoirs cannot pur-

chase their raw material in Germany as cheaply as foreign firms can, and therefore cannot compete with English manufacturers. They also state that similar conditions exist in other branches of home industries using iron. The producers of iron are called upon to revise their prices in favor of home consumers."

## Notes from Mexico.

### The Search for Petroleum.

DURANGO, July 14, 1903.—Oil drilling operations are being continued in various regions, but with small success, so far. Nothing is heard now of the erstwhile "boom" in oil lands in the valley of Mexico. The various companies which were formed a year or so ago seem to have relaxed their efforts; indeed, some of them never advanced beyond the share certificate stage. There is no authentic instance of native petroleum being used for fuel in Mexico, notwithstanding the many reported assertions by representatives of interested persons in regard to the daily production of alleged existing wells. The Tabasco Oil & Exploration Company report having sunk a well to a depth of 500 feet in the State of Tabasco with "encouraging indications." Much secrecy masks the operations of the Mexican Petroleum Company, at Ebano, near Tampico, despite large claims made in the press as to the results obtained. The Government of Chihuahua to encourage oil exploration in that State, offers a reward of \$10,000 for the first successful well. Meanwhile imports of coal from the United States are increasing to meet the requirements of the railways, whose expansion periodically makes more pressing the necessity which exists for the more active development of the known coal deposits of the republic.

### Imports of Coal and Iron.

Most of the coal and coke imported comes into the country by way of Tampico. The British vice-consul at that port gives the following interesting figures relating to the trade: "During the last few years the importation of coal and coke has been very considerable, though in 1902 the coal showed a decrease of 68,527 tons, the imports being 320,427 tons in 1901, and 251,900 in 1902. The coke imported in 1901 was 118,173 tons, and in 1902 was 146,600 tons, an increase of 28,527 tons. The greater part of the coal and the coke come from the United States. The coal imported through Tampico is chiefly used by the Mexican Central Railway, the coke is consumed by the smelters at Aguas Calientes, San Luis Potosi, Torreon and Monterey, and also by the new steel works at Monterey, which consumes about 10,000 tons every month, and has lately contracted for 50,000 tons of Westphalian coke, which is arriving regularly from Rotterdam and Antwerp."

### Iron and Steel Imports.

There has been a marked increase in the imports of iron and steel for structural and industrial purposes, as well as of machinery during the last three years. The introduction of the modern steel frame building, of which there are several in the capital, has been one of the causes of the larger imports of structural steel. As many other buildings of similar class are projected, this demand is likely to continue, or rather to further increase, as other large cities adopt the style, which has special advantages for a country like Mexico. Buildings of abnormal height and the consequent tunnel like streets, familiar to New York and Chicago, are not likely to become features of Mexican municipalities, however, the altitude of these new constructions being carefully regulated so as to avoid unhygienic conditions.

### European Competition.

That the market which Mexico offers for manufacturers of all classes is a good one is a fact appreciated by European manufacturers, and particularly by those among them who turn out iron and steel products in the lines of railway supplies, bridge work and other structural material. Several of the large German and Belgian companies have representatives in Mexico who devote their time and energies exclusively to working up trade for their principals. Other houses represent manufacturers in the United States as well as what may be considered competing firms domiciled in other countries.

These agents of European manufacturers are very active in pushing the particular lines in which they deal. Makers of similar products in the United States might take a hint from the inducements offered by some of these European houses. Here, for example, is a new Belgian concern soliciting business in the lines of "steel constructions, beams, channels, corrugated iron, bridges, rails and accessories, cast iron pipe, &c." and re-enforcing the appeal for patronage with the suggestive inducement of "facilities of payment to ayuntamientos." Mexican municipalities are sometimes "hard up," even as United States municipalities have been known to be, and this concession to an ambitious but closely pressed board of city fathers would doubtless carry weight in the awarding of a contract. The question of credit is one which counts heavily in opening up new accounts here, as is now pretty well understood by those manufacturers who have established connections in Mexico. This Belgian company, like most other competitors of manufacturers north of the Rio Grande, are ready to accept established customs as they find them, and, if necessary, to grant still further concessions to secure trade, as is evident from their announcement. It is only by manifesting a like spirit of accommodation that manufacturers of the United States can secure orders in lines in which the European producers are really competitors.

### Industrial Notes.

Imports in the month of March of this year reached a total of \$6,745,364.65, gold; in the corresponding month last year the total was \$5,319,041.74. Exports in March, 1903, were valued at \$22,101,160.67, silver, as against \$14,013,408.25 in March, 1902. The imports in March of this year included the following commodities: Machinery and apparatus, \$762,656.04; vehicles, \$134,748.36; arms and explosives, \$150,147.94. In the exports for the same month previous metals figured to the value of \$9,641,597.23. For the nine months of the fiscal year, 1902-3, for which returns are made by the Treasury Department, the totals were: Imports, \$56,364,836.79, gold value; exports, \$144,204,418.98, silver value.

Two new railway stations are to be built in the cities of Merida and Progreso, Yucatan, at a cost of about \$250,000, gold. The contract for their construction has been given to Milliken Brothers.

The Pacific port of Mazatlan, long closed on account of the bubonic epidemic, has been reopened to maritime traffic amid public rejoicing.

The principal railway companies of Mexico have adopted a new and uniform system of freight classification which has just become effective with the approval of the Government.

D. G. Farragut has been appointed representative in Mexico of the Pressed Steel Car Company of America, with headquarters in the City of Mexico.

A concession has been obtained by De Witt Foster and Merritt A. Griffin for the establishment of a manufactory for decorative art work in metals. The sum of \$5,000,000, gold, is to be expended in the buildings and machinery. The concessionaires are reputed to represent New England capitalists.

A company has been formed with \$100,000 capital, Mexican silver, to establish and operate an electric lamp manufactory. A concession covering the enterprise has been granted to A. Chaillet, who is the patentee of the lamp which it is proposed to place upon the market. Mr. Chaillet is said to have successfully originated and conducted a similar undertaking in Shelby, Ohio. All the electric lamps at present used in the republic are imported.

The rolling mill and puddling departments of the Mexican National Iron & Steel Company of Durango have been idle for a few weeks on account of a shortage of pig iron. The company are always rushed with orders for their merchant iron and mining specialties and find it difficult to keep up with the demand, in view of inadequate facilities for turning out pig iron. With the projected new blast furnace of greatly increased capacity this drawback will be removed.

E. J. Moses, for several years superintendent of the rolling mill of the Mexican National Iron & Steel Company, having completed the term of his contract, has returned to his home in Wisconsin. Mr. Moses, although a

young man, may be considered one of the pioneers in the business of iron and steel manufacture in Mexico, the rolling mill of the works with which he was so long connected, having been erected under his supervision.

Señor Vicente Ferrara, the president of the Monterey Iron & Steel Company, has recently been visiting the capital. In an interview Señor Ferrara is reported as saying in relation to the works: "The plant has been in operation for the past 20 days, and is turning out 350 tons of steel daily. . . . At present we are only turning out structural beams and pig iron. The latter is being shipped to the United States in large quantities. We have many orders; in fact, enough to keep the plant busy for six months. By July 15 we expect to begin turning out steel rails, which will be used by the various railroads of the republic, and possibly in the United States."

An attempt is being made to gain control of the known deposits of tin ore in Mexico. The names of C. H. Donaldson and J. H. Laughlin are associated with the movement. The underlying motive is said to be to consolidate the mines under one company, to further develop them, and to establish a plant for the manufacture of tin plate. There are no known deposits of tin ore of any magnitude in Mexico. The most important mines at present being worked are situated near San Alto, in the State of Zacatecas, from which less than 3000 kilos of metallic tin were produced in the years 1900 to 1902 inclusive.

The total value of the machinery imported during the nine months of the present fiscal year was \$7,431,870.80, gold, an increase of \$1,837,357.85 over the total for the corresponding period in the last fiscal year.

A report comes from Mexico that John J. Moylan, the railway contractor, whose discovery of a large body of iron ore in the State of Guerrero was noted in *The Iron Age* of April 30, has disposed of the property to New York capitalists.

The California Corporation, the Mexican Petroleum Company, operating near Tampico, have placed an order with Manning, Maxwell & Moore of New York for additional equipment. The oil company are said to be using crude petroleum for fuel in their engines. They claim a production of 600 barrels daily.

A cargo consisting of 3500 tons of lead and copper bars left Tampico for New York early in the month consigned to the American Smelting & Refining Company.

The Waters-Pierce Oil Company intend to build a refinery at Tampico for extracting paraffin from crude petroleum, a concession having been granted them by the Government for that purpose. The company already have an extensive plant at Tampico and have recently purchased additional land for its enlargement.

Shares of the Monterey Iron & Steel Company are in demand at a premium of \$25.

Oil explorers in the State of Vera Cruz, who are believed to represent Standard Oil Company interests, have recently placed an order for boilers with the Atlas Engine Works of Indianapolis, Ind.

Fogarty & Dickinson of San Luis Potosi, have secured the contracts for electric lighting equipments for three Mexican municipalities, situated in the States of Puebla, Sinaloa and Colima.

Among the new machines recently installed in the Mint in the National Capitol are two coining machines made by the S. C. Dill Machine Company of Philadelphia, which were especially recommended by the authorities of the Mint in the city where the machines were made, and two edging machines, made by the E. W. Bliss Company of Brooklyn.

Wire and iron nails aggregating 415 tons were imported in the month of June.

A company composed of Mexicans and citizens of the United States will develop 12,000 acres of coal bearing lands near Agustilan, in the State of Michoacan.

Imports in June included 266 tons of iron pipe shipped by rail by the National Tube Company. J. J. D.

The Marshall & Huschart Machinery Company, Chicago, are sending an announcement to their friends in the trade that they are now getting ready to return to their old quarters at 62-64 South Canal street, which were destroyed by fire several months since. The building has been completely rebuilt, and they will occupy the

first, second and third floors. An informal opening will take place on August 1.

#### Pacific Coast News.

SAN FRANCISCO, CAL., July 13, 1903.—Business as a whole is somewhat dull at present, but this is the dull season of the year. Then, too, the season has been late in grain and fruit, and indeed in produce of almost all descriptions, the result being that there is not quite as much money in circulation in the country as usual and business is held over. Last week, for the first time in a year, the clearing house exchanges fell off compared with those of 1902 for the same time, though the decline was slight. This, of course, affects the hardware and iron and steel trades, as well as every other. Some recent failures have produced a bad impression, having tended to make the banks restrict their credits and make matters more stringent than for a long time. Eppinger & Co., grain buyers and wheat shippers, who failed for \$1,500,000 under peculiar circumstances, and the value of whose assets is not yet certainly known, were among the leading buyers of produce, and their disappearance from the market has given rise to considerable confusion and, of course, delays the purchases of farmers. The failure of Porter Brothers, engaged in the fruit trade, has had a similar effect, and now comes the failure of Lyden & Co., buyers of all kinds of produce, canned and dried fruit, salmon, &c., who failed in an ambitious bean speculation, and although they may make a better showing when their holdings of beans are finally disposed of, they cannot at present show available cash assets exceeding 5 cents on the dollar. But the effect of all this will soon pass away, and there is no doubt that we will have a good though a late fall trade.

There are still particular lines of business that are flourishing, and will continue to flourish, which exercise a great deal of influence on particular sections of the hardware and machinery trade. Such, for instance, is the oil industry, which, though not making as great a noise as in 1900, is advancing in extent and importance. Oil well supplies, pipe, machinery, &c., are in great demand, and the Standard Oil Company will have to double the number of pumping stations over their 300 and odd miles of pipe line, entailing an expenditure of about \$750,000. The development of the lumber and shingle industry of Humboldt and Mendocino counties is calling for a great deal of machinery, hardware, nails, &c., and as the development is constantly increasing the demand in these directions is all the time growing larger. Prices for wheat, barley and other produce are as good as they were last year, and this, as then, makes up somewhat for the shrinkage in the wheat and barley crops. The outcome of the fruit crop will be about the same as that of last year, and there will be a good vintage.

There have been very light imports by sea for the past couple of weeks. The steamers via Panama have had comparatively little hardware, pipe, &c., in their cargoes, and there has been only one arrival by sea. That was the "Alphild," on July 10, which brought from Newcastle-on-Tyne 400 tons of pig iron. There have been considerable receipts of hardware, pipe, &c., by rail, but very little iron or steel. There are, however, at present 24 vessels either on the way or laid on for this city from Antwerp and 12 from Newcastle-on-Tyne with cargoes of pig iron, railroad iron, bar iron and steel, structural iron and steel, &c. All this will be wanted, as operations in our shops are active, and but for the dispatches in the papers one would never know from the activity at our shipyards that there was ever a shipbuilding trust or that Californians had any interest in it. Building activity does not seem to have abated in the least. In fact, we are promised a 16-story steel and marble structure alongside the big Flood Building, now going up on Market street, and there are many other smaller ones projected.

The export movement to the Orient of Eastern manufacturers of iron and steel in transit has not been very large during the period under review. There have, however, been a good many bicycles, sewing machines and typewriters exported to Japan, China and Australasia.

J. O. L.

### The New Prentice Radial Drill.

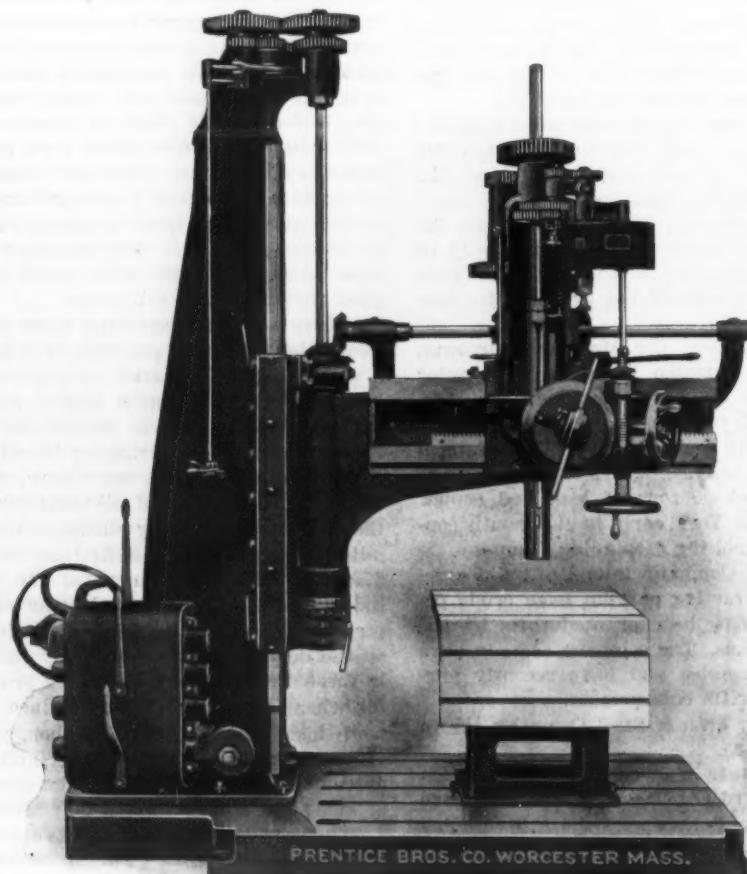
The Prentice Brothers Company of Worcester, Mass., are getting out a line of new gear driven radial drills which embody a number of new ideas. They will be manufactured in the company's seven standard sizes, from 3-foot swing up. The new machine is shown in the accompanying illustrations, one showing the front of the radial, the other the mechanism of the back of the head. Among the features of the radial is a new clutch, designed principally to secure a reverse on the arm. This clutch consists of two arms, or pins, which spread the friction ring, hugging the inside surface of a cupped out beveled gear. A beveled spool is fitted loosely on the shaft, and is operated longitudinally on the shaft by means of a lever at the front of the head. The spool spreads the friction arms, or pins, which in turn expand the friction ring which clutches the gear. The friction is splined to the shaft and drives the beveled gear. The spool is case hardened, and the pins are of hardened tool

with one hand reverses the motion of the spindle, while with the other hand he disengages the back gear and the tap is backed out at five times the tapping speed.

The automatic stop motion is adjustable for drilling holes to any depth, and is arranged to throw out the feed when the spindle is at its lowest position. This is accomplished by means of a slot in the quill and a vertically adjustable pin. With a gear feed radial this feature is very important, preventing the possibility of damage, which must result were the drill to keep on feeding beyond the desired position.

The new tool has eight changes of feed, by means of primary and secondary banks of gear, the primary having four changes and the secondary two. The feeds range from 0.005 to 0.054 inch, in geometric progression, to one revolution of the spindle.

Another feature is the device for the quick approach and return of the spindle to and from the work. This is accomplished by means of the double handle shown on the front of the head, which is either pulled or pushed



THE PRENTICE RADIAL DRILL.

steel. By means of this clutch the operator is enabled to reverse a tap with the greatest ease, there being none of the customary delays caused by the failure of a clutch to work quickly. This clutch may be thrown in or out while the spindle is running, no matter what the strain on the spindle may be.

The back gears are arranged to be thrown in or out without stopping the spindle, by means of a lever on the head of the machine. The high speed is driven by friction, low speed by a positive friction clutch which places the ratio of gearing between the friction clutch and spindle, when the back gears are in, at about ten to one. The back gear ratio is five to one, and there is a constant ratio of about two to one between the friction and the spindle. Thus the friction is aided by that leverage.

By means of the clutch reversing mechanism, and the device for instantly throwing in or out the back gears, the operator is enabled to save time in tapping. Immediately the bottom of the hole is reached the operator

to operate a friction and engage the power feed. With this handle the spindle is lowered to the work, and immediately the cutting tool or drill touches the work the power feed may be engaged. Instead of it being necessary to raise the spindle, sometimes as much as  $\frac{1}{2}$  inch, in order that the clutch teeth will intermesh to start the power feed, thus compelling the spindle to run idle to the work, the hand feed permits the operator to force or crowd the feed by hand ahead of the power feed. In this way the V-point of a twist drill can be fed by hand faster than the feed to be used when the drill is cutting at its full diameter.

The radial is driven by motor or from the main line shaft by a gear changing device at the base of the column, as shown in the illustration. There are eight changes of speed, by means of 4 shafts, 11 gears and 6 friction clutches, which are operated by three levers shown on the front of the case covering the device. All three levers must be in clutch in order to run the machine, and

It is impossible to lock gears in conflicting ratios, and therefore damage through carelessness is made impossible. A plate showing the different combinations of the levers to give the eight different speeds is attached to the machine. Throwing the three levers to the left gives the fastest speed; throwing the upper lever to the right, the two lower remaining at the left, gives the next fastest, and so on to the slowest, which is accomplished by throwing all the levers to the right. By means of the back gears 16 changes of speed are obtained.

The vertical shaft inside the column transmits power from the speed changing device to a pair of spur gears at the top of the column, and a second vertical shaft on the outside of the column transmits the power to the arm and the arm to the head. The arm is raised and lowered by power without stopping the machine, by means of a lever on the side of the column. This lever throws in a train of gears at the top of the column for raising the arm, and throwing the lever the opposite way throws in a different ratio of gears, which lowers the arm twice as fast as it is raised, which is easily accomplished be-

#### Central American Notes.

PUERTO BARRIOS, C. A., July, 1903.—The railroad from this port westward to the interior of Guatemala will have to be rebuilt nearly throughout its entire length. Due to neglect on the part of the Government the rails, locomotives, cars and bridges are literally rotten; several of the bridges were washed away by the recent rains, the handsome steel bridge over the Motagua River having been destroyed by the freshets quite a while ago. Ever since the line went out of American hands everything has collapsed, and I learn that the Government is now desirous of handing it over to responsible Americans to re-equip and build through to the capital city on the Pacific side. Naturally, this line would be of immense help in transporting material for the Panama Canal to the Pacific side, the distance across being very short. It seems surprising that our American capitalists should not have thought of building this road long ago.

Another country which has entirely escaped Amer-

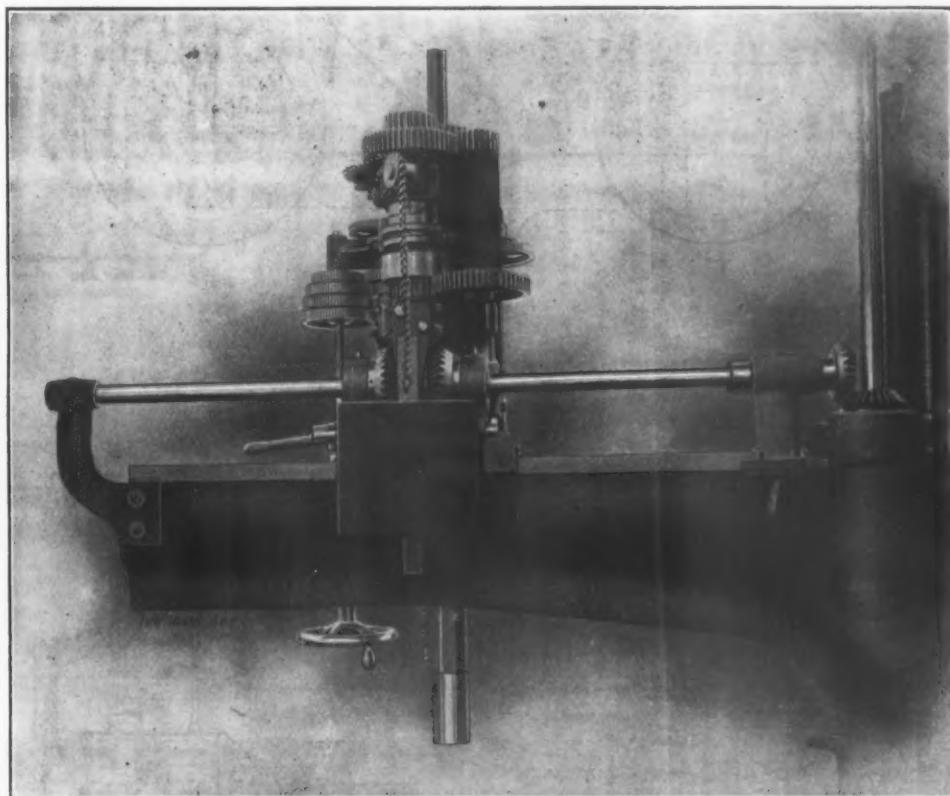


Fig. 2.—Rear View of Head of Prentice Radial Drill.

cause of the greater ease with which the arm is lowered compared to the power required to raise it. The base plate is T-slotted and heavily ribbed. The driving pulley is placed at the side or the back of the column, as ordered, allowing the machine to be placed at right angles or in line with the main shafting.

The radial shown in the engravings has a 5-foot arm, and will drill to the center of a 114-inch circle. The traverse of the spindle is 15 inches; traverse of saddle on column, 34 inches; distance of spindle to base plate, maximum 60 inches, minimum 10 inches; diameter of spindle in sleeve, 1 1/8 inches; hole in spindle, Morse taper No. 4; speed of driving pulley, 300 per minute. The total height of the machine is 106 inches and the weight 6000 pounds.

The open hearth steel plant of the American Tubing & Stamping Company, at the east end of Bridgeport, Conn., was started last Saturday, the first heat showing the following analysis: Carbon, 0.09; manganese, 0.35; phosphorus, 0.009, and sulphur, 0.03. The company have three plants in Bridgeport, the hot rolling mill at Cedar Creek, the cold rolling and stamping mill at Hancock and Railroad avenues, and the new steel plant.

can enterprise is Belize or British Honduras. Only three days by steamer from Mobile or New Orleans, under British rule, the imports of iron, steel and hardware of all kinds from the United States are practically nil. Owing to climatic conditions and fires many of the wooden structures are now being replaced by iron buildings; two steel wharfs are needed, and railway and tram lines could easily gridiron the interior, which is as flat as one's hand and extremely rich in tropical products; these include mahogany, ebony, fibers, wild rubber, coca and fruits and chocolate bean. An American bank has lately been started at Belize, and although with very small capital is doing well. This section is all the more tributary to American commerce from the moment that a large percentage of their exports are taken by the United States. There is a good opening at the capital of British Honduras for an electrical lighting plant, nothing better than the antiquated kerosene oil being procurable for either street or house lighting.

Hickman, Williams & Co., Chicago, have secured the services of B. E. Green, who for nearly 12 years was connected with Pickands, Brown & Co. Mr. Green will represent the firm in the Chicago territory.

### New Valves for Regenerative Furnaces.

The open hearth or Siemens-Martin process, which, although it did not, when first introduced, excite the interest created by the invention of Sir Henry Bessemer, seems destined to compete with the latter for supremacy. The use of a basic lining immensely increased its field of usefulness, and the charging machine, by making large furnaces possible, aided materially in reducing the cost of working. There are still, however, certain weak points about the furnace which make themselves felt more and more as the size is increased. The most troublesome fea-

ture nowadays is doubtless the reversing valve, or, as is usually the case, the system of valves.

each reverse—would doubtlessly help, but the same result, together with other advantages, is obtained by two valve systems which have recently been patented in Germany. Both are based on the same idea—namely, to completely shut off the gas and air from one end of the furnace before the admission valves are opened at the other end and the methods of effecting this in the two inventions have many points of similarity.

#### The Czekalla System.

We will describe first the valve system designed apparently by J. Czekalla, who has an article on the same in the mid-June number of *Stahl und Eisen*. He begins

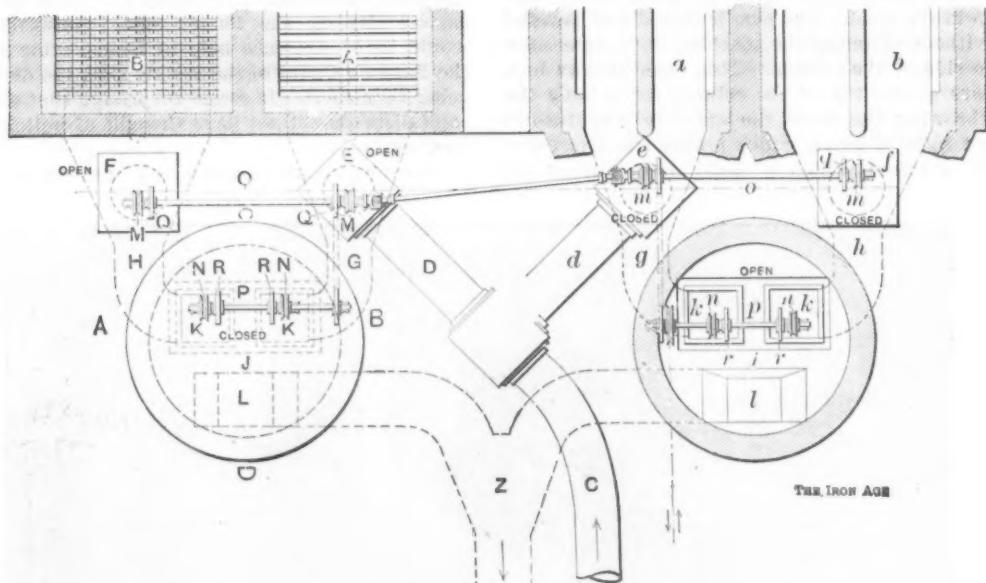


Fig. 1.—Horizontal Section.

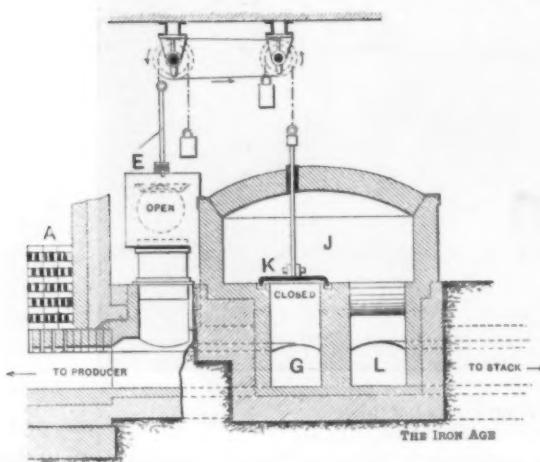


Fig. 2.—Section C D, Fig. 1.

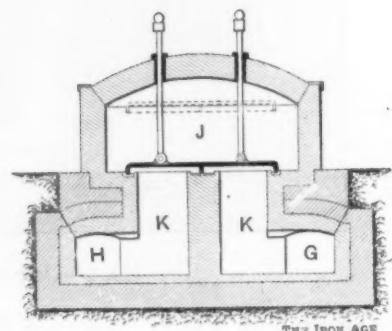


Fig. 3.—Section A B, Fig. 1.

#### THE CZEKALLA REGENERATIVE VALVE SYSTEM.

ture nowadays is doubtless the reversing valve, or, as is usually the case, the system of valves.

The simple and ingenious butterfly valve is exposed to too rapid destruction, owing to the difficulty of keeping the flap in shape, subjected as it is to great heat and extreme variations of temperature. For large furnaces, at least, this trouble is not overcome by water cooling. The revolving bell with water seat was a decided step in advance, and the Forster type of valve was another, but both share with their predecessors the disadvantage that during the actual operation of reversing the gas flue is open to the stack. The large amount of coal, which is not only fruitlessly but harmfully burnt in this short period of direct connection, was indicated in the article on this subject appearing in *The Iron Age* of May 17. The means there proposed of preventing this—namely, an automatic arrangement for shutting off the gas before

by saying that the principal losses in reversing are due to the following causes:

1. Direct connection of gas flue and stack.
2. Gas, which having passed the reversing valve cannot reach the furnace because, meeting the products of combustion coming in the opposite direction, it is forced to the stack.

All reversing mechanisms hitherto used suffer from cause 1, as all open one valve and close the other simultaneously, and there must, therefore, in the middle position, be direct communication between gas flue and stack. Furthermore, if the stack damper has not been closed there is a draft, causing not only loss of gas, but also early destruction of the valve chamber by making combustion possible therein. The second evil is greater the longer the flues, because of the larger quantity of gas lost at each reverse.

In the new arrangement there are separate flues for taking gas to and from the furnace, which flues only come together when close to the regenerators. For each of the latter there is a valve, making four in all, an apparent evil, but in reality a gain as compared with former arrangements, which combined as many functions as possible in one apparatus, thereby entailing loss of the whole if one part became damaged. The fact that products of combustion no longer pass through the gas flues and valves assures the latter a longer life, as they are not exposed to the sudden and extreme variations of temperature.

Important in the new arrangement is the automatic closing of the stack flue, by which loss of gas is avoided. Each reverse entails a complete shutting off of the furnace from both gas flue and stack, by which fact, according to Mr. Czekalla, the following advantages are obtained:

1. The moving streams of gas, air and waste products

Referring to Figs. 1 to 3, A and *a* are the gas, B and *b* the air regenerators of a 15-ton furnace. The gas flue C, which can be closed by a valve, divides into the two branches D and *d*, which terminate close to the regenerators in the gas valve chambers E and *e*. The air valves F and *f* are provided with a valve chamber open on one side. All the above valves are located on the flues G, H, *g* and *h*, terminating under arches J and *j*, which may be replaced by cast iron valve chambers. Above the ends of each of these flues and within the arch are stack valves, K and *k*, which, if open, permit the passage of the products of combustion to the stack through the flue L.

In Fig. 1 gas and air pass through E and F into A and B, while the products of combustion leave *a* and *b* through *g*, *h*, *k* and *l*. The valves and necessary counterweights are hung on chain wheels, M, *m*, N and *n*, which are loose on the shafts, O, *o*, P and *p*, actuated by any simple mechanism. As all shafts turn in the same direction,

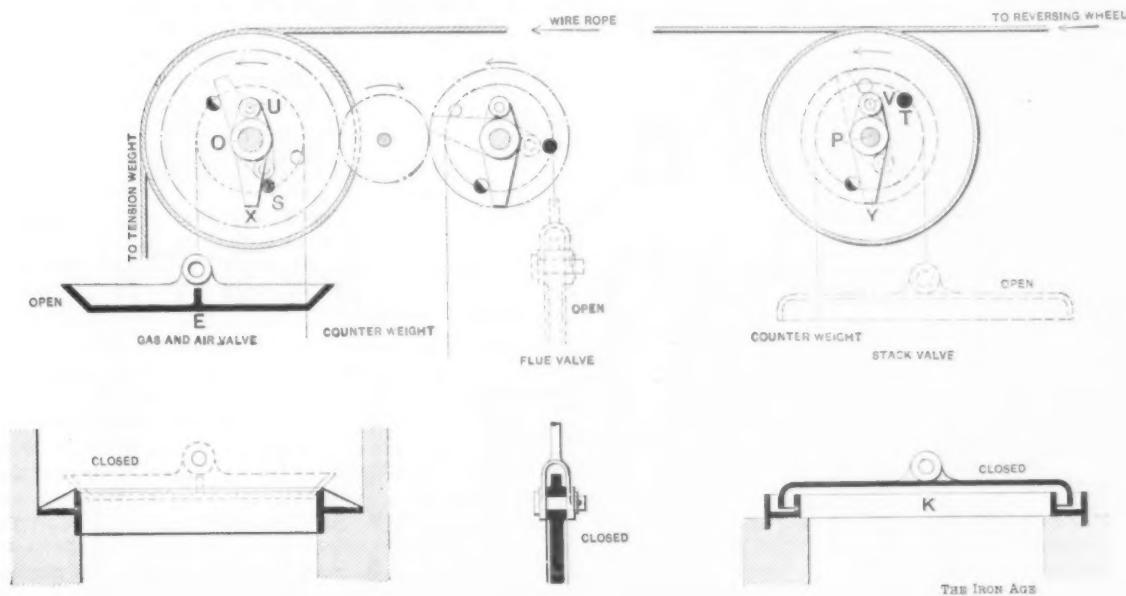


Fig. 4.—Damper.

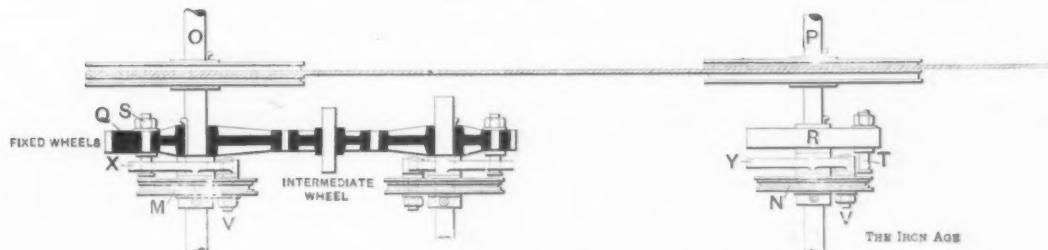


Fig. 5.—Plan of Operating Mechanism.

#### THE CZEKALLA REGENERATIVE VALVE SYSTEM.

are brought gradually to rest and equally gradually started in the opposite direction, thereby avoiding all eddying currents in the flues.

2. In the middle position, the furnace is clear of flame, permitting an unobstructed view of the interior, without there being at the same time a current of air to cool off the bath.

3. The necessity of shutting the gas regulating valve before each reverse and subsequently resetting the same to its exact former position is avoided.

4. The new arrangement can be used to regulate both gas and air, more especially as the stack flue valve is of necessity regulated at the same time, the area of the latter retaining a constant relationship to that of the air and gas flues. Former arrangements necessitated special regulation of the stack damper, part of the products of combustion being otherwise replaced by cold air drawn through the doors and other parts of the furnace. In practice the stack damper is seldom used for that purpose.

the valves must be so hung that when E, F and *k* are lowered *e*, *f* and K are raised. O and *o* can be made in one piece by slightly altering the positions of E, *e*, F and *f*. Close by all chain wheels, disks Q, *q*, R and *r* are keyed, which, by means of the pins S and T, Figs. 4 and 5, actuate the pieces X and Y, securely fastened to the chain wheels by the bolts U and V. The pins S, T are so arranged that when a valve is moved the corresponding valve on the other side of the furnace remains stationary. In Fig. 4 the pin S in its initial position (drawn black) permits the valve E, when the shaft is turned in the direction indicated, to be lowered until the middle position (half black) is reached. The stack valve K remains stationary, although the pin T has also moved from the all black to the half black position. By continuing the motion, the pins S, T reach the position shown by being drawn white, whereby the valve E remains stationary and K is raised. The reverse is thus accomplished by first shutting E, F and *k*, and then opening *e*, *f* and K, all valves being closed in the intermediate

position instead of all being open, as in old style arrangements.

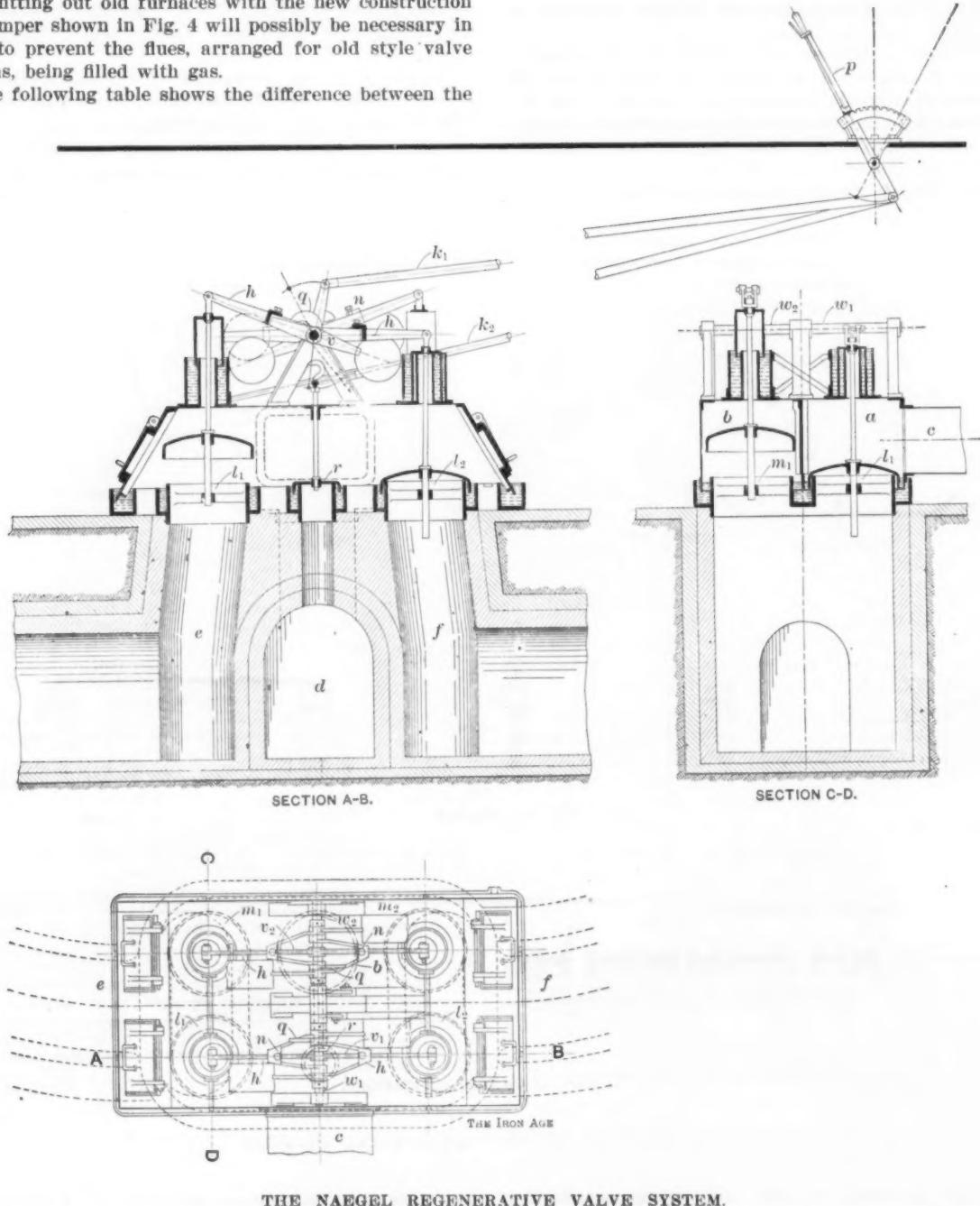
Another advantage is that the flues can be considerably shortened, especially when only one of them (that leading to the stack) is underground. Furthermore, they can all be at the same level, as they do not cross each other, and water is thus avoided, while with the old construction a deep stack flue was unavoidable. Finally there is more room for the building columns, so that heavy and expensive girders are rendered unnecessary.

In fitting out old furnaces with the new construction the damper shown in Fig. 4 will possibly be necessary in order to prevent the flues, arranged for old style valve systems, being filled with gas.

The following table shows the difference between the

A. Naegel in the previous number of our German contemporary, is the much more compact arrangement shown in Fig. 6.

His valve consists of two chambers, *a* and *b*, the former always being open to the gas flue *c* and the latter to the stack flue *d*. Each of the two flues *e* and *f* leading to the regenerators has an opening, *l*, into the gas chamber *a*, and an opening, *m*, into the stack chamber *b*. Each opening is closed by a valve connected by a stem to the lever *h*, which is loose on the shaft *w*. The valve



THE NAEDEL REGENERATIVE VALVE SYSTEM.

amount of work necessitated by a bell valve and corresponding figures for the arrangement shown in Fig. 1, for a furnace of the size mentioned:

	Bell mechanism.	New mechanism.
Excavation	500 cubic yards.	167 cubic yards.
Red brick	540 cubic yards.	66 cubic yards.
Fire Brick	40 cubic yards.	92 cubic yards.
Wrought Iron	5,216 pounds.	7,921 pounds.
Cast Iron	9,246 pounds.	3,130 pounds.

The German author figures that the generally used reversing mechanism wastes, in a 15-ton furnace, in a year, over 800 tons of coal, in the form of gas going unburnt up the stack.

#### The Naegel System.

The other mechanism carrying out the same idea—namely, to close the valves at one end of the furnace before those at the other end are opened—as described by

stems pass through the roof of the chambers *a* and *b* without friction, and absolutely gas tight by means of water seals. To pass the gas in one direction, *l*<sup>1</sup> and *m*<sup>1</sup> are opened simultaneously, *l*<sup>2</sup> and *m*<sup>2</sup> being shut, the reverse being the case when the gas passes in the other direction. In reversing, the two open valves are closed before the others are raised, so that the middle position of the reversing mechanism entails all four valves being closed, and no connection between gas flue and stack. Reversing is carried out by means of two arms, *v* and *v*<sup>2</sup>, keyed to the shafts *w* and *w*<sup>2</sup>. All valves being closed, the levers *h* are horizontal. Each of these levers has a movable projection, *n*, which lies against the upper side of the arm *v* when the middle position is reached. By continuing the motion the ascending end of the arm raises the corresponding valve lever, while the descending end parts from the projection *n* and leaves the valve

closed. The two shafts  $w$  and  $w^2$  are turned in opposite directions by a single hand lever,  $p$ , moving the connecting rods  $k$  and  $k^2$ . The reverse is accomplished by turning this lever from one extreme position to the other. When it stands vertical the gas is cut off from the furnace, and, furthermore, there is then no connection between the stack and the checkers, thereby avoiding any chilling of the latter by cold air. By not throwing the hand lever its full distance the amount of gas can be regulated, thus rendering a special regulating valve unnecessary, and the opening to the stack flue can be regulated by having on the arm which transmits motion from  $k^2$  to the shaft  $w^2$  a series of holes for connecting the former, finding by experiment which is the most favorable. By using a similar arrangement for the air it would be possible to regulate exactly the amount of waste gas going through the gas and the air regenerators, respectively. The necessary water for sealing runs first through the four valve stem pots and then through the trough shaped base plate. The small valve  $r$  in the chamber  $a$  is for forming a direct connection between the gas flue and stack and is used in starting the furnace.

This reversing arrangement has been in use a long time on two 20-ton furnaces at Doeblen, near Dresden, proving satisfactory in every respect.

## New Publication.

**Reading Architects' Drawings;** Pamphlet. Published by the David Williams Company, 232-238 William street, New York. Pages, 28;  $5\frac{1}{2}$  x 8 inches in size. Illustrated. Price, 25 cents.

The ability to read architects' drawings with facility is a necessary part of the education of every mechanic, and with a view to aiding those mechanics who experience more or less difficulty in doing so some suggestions and instructions of interest and value have been presented in a lecture by W. Carbys Zimmerman, a leading architect of Chicago. The work deals with scale drawings, the uses of color and shading to denote different materials—the special points being noted—the consideration of the specifications in connection with the plans and working drawings, and the use of plans, elevations and various dimensions to make the intent clear to those who must carry out the work. The pamphlet contains a second article prepared by James K. Carpenter, devoted more particularly to the needs of house painters.

## Trade Publications.

**Metals.**—An attractive four-page leaflet has just been issued by the Genesee Metal Works of Rochester, N. Y., of which Hazard, Coates & Co. are proprietors. It is printed in two colors, on deckled edged stock, and in an interesting manner exploits the various metals, alloys and compositions produced by the concern.

**Engraving and Electrotyping.**—A. Mugford, Hartford, Conn., and 136 Liberty street, New York, are practical designers, engravers and electrotypers, and have a thoroughly equipped and up to date foundry. They make catalogues from the ground up, including high grade engraving, printing and electrotyping. Their photo-engraving department is turning out work of a standard unsurpassed by any other house, and all their plates are prepared with a view of pleasing the most exacting pressman, being accurate, type high and properly mounted. The first two engravings in a very elegant catalogue just prepared by them show the comparative value of the half-tone process and the wood engraving. The same machine appears in both cuts. The first shows softness and artistic finish, together with faithful reproduction of the drawing, while the wood cut presents a plate that is unequalled for its printing qualities, and can be relied upon for results under any and all circumstances.

**Narrow Gauge Railway Materials.**—A voluminous catalogue by Arthur Koppel, 66 Broad street, New York, describes his narrow gauge railway materials of all descriptions, including portable and permanent tracks, rails with all accessories, cars, &c. There are complete industrial equipments for hand, steam and electric power. There is such a great variety of these materials manufactured that it has been necessary to confine the catalogue mainly to standard types. Of these full particulars are given.

**Core Ovens.**—There are now in use over 1000 core ovens built by the Millott Core Oven Company of Brightwood, Mass. In this type of oven the cores are placed on a set of swinging shelves, which operate independently of each other, so that the cores on a single shelf can be removed without lowering

the temperature of the oven, or in any way hindering the baking process on the other shelves. When the shelf is swung out the rear door closes the opening, thereby retaining the heat in the oven.

**Gas and Gasoline Engines** built by the Frank M. Watkins Mfg. Company of Cincinnati are described in a neat catalogue. Their No. 2½ pumping engine is specially designed for artesian well work. The brass pump cylinder can be lowered into the well to any reasonable depth, while the air chamber, check valves and stuffing boxes for winter work are located in a frost proof pit below the pump. The cross head connections are on guides, which keep the pump rod positively in line and does not wear out the stuffing boxes. The strokes are 8, 10, 12, 16 and 20 inches, while the speed of the pump is 40 to 50 revolutions per minute. The gear wheel which carries the connecting rod is 27 inches in diameter, 2-inch face, back geared 8 to 1. The engine has an extension shaft, and a pulley can be fitted to this shaft when required, and the pinion driving the gear wheel can be disengaged so the pump will not work, when the engine can be used for other power purposes.

**Screw Plates, Taps and Dies.**—A new catalogue by the E. F. Reece & Co., Greenfield, Mass., covers their large list of screw plates, taps and dies. There is also a list of various assortments of reamers, counterbores and other similar tools. The firm have recently added several sizes of hand and power bolt cutters and nut tappers.

**Molding Machines.**—A very handsome catalogue has been received from Henry D. Pridmore, Nineteenth and Rockwell streets, Chicago. When molding machines are installed the employing of skilled foundry labor, as far as the molding of the castings is concerned, is generally found unnecessary. The Pridmore machines are hand rammed, experience having shown this to be the best method, both as regards speed and quality. The patterns are removed from the sand by means of a stripping plate and yoke to which the patterns are attached, and which, by the downward movement of a lever is positively and accurately lowered, thereby removing the pattern from the mold. By this method all possibility of the patterns being damaged is eliminated, and castings true to pattern are insured.

**"Greenhouse Heating and Ventilating"** is the title of a catalogue by the Lord & Burnham Company of Irvington-on-Hudson, N. Y. The company have added to their former list of cast iron pipe, fittings for caulked joints for 2-inch,  $3\frac{1}{2}$ -inch and other sizes of pipe; also new patterns for ventilating apparatus and a full line of pipe chairs and hangers for all kinds of greenhouses. Their standard hot water boiler has been recently much improved. The small tubes formerly used, which required frequent cleaning to be effective, have been omitted and a series of fire channels, which are self cleaning and better fire surface, substituted. Also the return flue which connects the fire box to the smoke outlet has been doubled in length. Improvements have also been made in their sectional steam and water boilers.

**Water Motors.**—When the water motors built by the Chicago Water Motor & Fan Company, 22 South Canal street, are used in elevator service an automatic valve is provided. This is connected to the brake so as to start the motor the instant the brake is used. This prevents any waste of water. Water is only used to lift the load, the platform being weighted so that it will descend without the use of power. Loads of 800 to 1500 pounds can be raised at the rate of 50 feet per minute, depending upon the pressure in the street mains.

**Boilers.**—The Milwaukee Boiler Company of Milwaukee, Wis., are making a specialty of boilers for high pressure. Their Continental internally fired boiler is provided with Morison corrugated furnaces. These boilers are remarkable for their efficiency. Combustion in the furnace proper is facilitated by the corrugations of the furnace, which serve as baffles to the passage of burning gases. These, together with the brick arches, cause a thorough admixture of the gases with oxygen of the air. The combustion in the furnace alone is equivalent to that taking place under a tubular or water tube boiler. But to secure more complete combustion the boiler is provided with a fire brick combustion chamber. Soon after the boiler is fired these fire brick become incandescent and any unconsumed gases or particles of coal that impinge against them are consumed in this combustion chamber. These boilers are made in sizes from 75 to 300 horse-power.

How to organize, build and maintain a rural telephone line is told in a bulletin by the Stromberg-Carlson Telephone Mfg. Company of Rochester, N. Y.

The Stewart gas blast furnaces are described in a circular by the Chicago Flexible Shaft Company, La Salle avenue and Ontario street, Chicago. They make the unusual proposition to send any furnace, out of 55 sizes and kinds, on trial. If it fails to meet all requirements it can be returned.

R. Hoe & Co., 504 Grand street, New York, have issued a catalogue calling special attention to their rotary, web effect printing and folding machines for books, magazines, catalogues, &c.

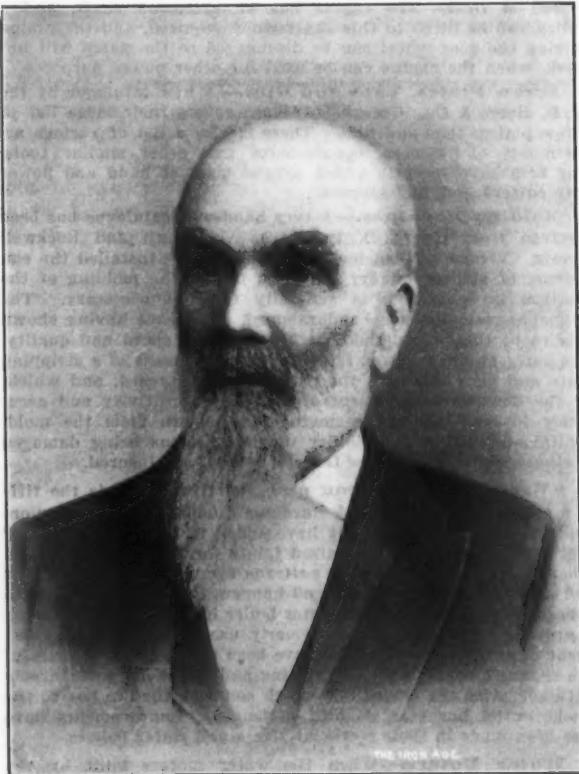
The Pittsburgh Valve & Fittings Company of Pittsburgh, Pa., have recently erected and equipped, in the city of Barberton, Ohio, an extensive manufactory for the production of iron pipe fittings, brass and iron valves, cocks, &c., for steam, water, gas and oil. A handsome catalogue describes these goods.

David E. Roberts, chief engineer of the famous Dowlais works in Wales, is now in this country visiting some of the steel works.

## OBITUARY.

## THOMAS CHALMERS.

Thomas Chalmers, father of W. J. Chalmers, chairman of the Executive Committee of the Allis-Chalmers Company, died at his residence in Chicago on July 13, aged 87 years. He was one of the founders of Fraser & Chalmers, manufacturers of mining machinery, which firm was merged into the Allis-Chalmers Company two years ago. Thomas Chalmers was born at Dronley, near Dundee, Scotland, June 14, 1816. At the age of 14 he was



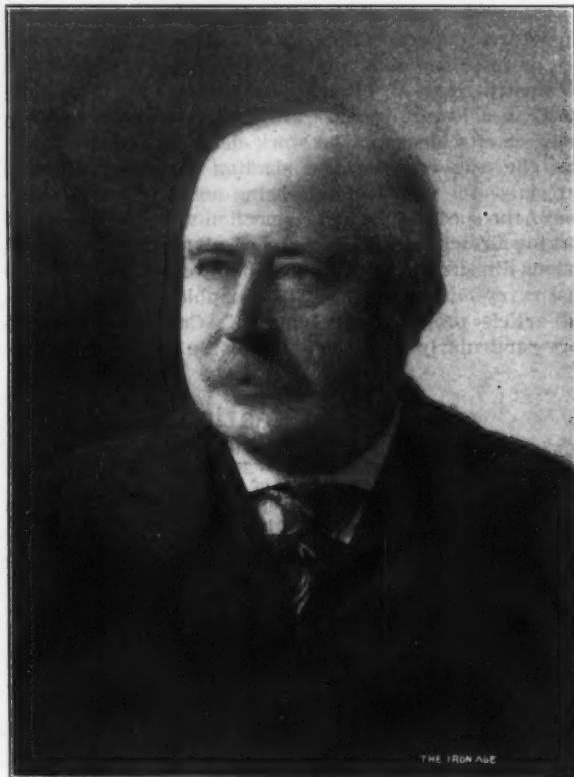
THOMAS CHALMERS.

apprenticed to learn the trade of machinist at Dundee, and as a skilled mechanic worked in Scotland and England for 13 years. He was married July 2, 1840, to Jeantee Telfer of Greenock, Scotland. In 1843 Mr. Chalmers brought his family to America, and settled in the farming district between Joliet and Lockport in the State of Illinois. In the spring of 1844, it is stated, Mr. Chalmers walked to Chicago, 40 miles distant, seeking employment as a machinist. He was engaged in this capacity by a Mr. Nickerson, and while thus employed he installed the first steam heating apparatus in Chicago, that of the old Dearborn school. Later he was employed by P. W. Gates, with whom he was associated in business for nearly 30 years. Mr. Chalmers was closely identified with the industrial growth of Chicago, and is credited with having built the first water works system of the city of Chicago—a single pump at the foot of the river. In 1855 Mr. Chalmers assisted in the organization of Gates, Warner, Chalmers & Fraser, the other members of the firm being P. W. Gates, E. S. Warner, A. G. Warner and David R. Fraser. This firm was succeeded in 1857 by the Eagle Works Mfg. Company. In the winter of 1871-1872 this corporation was dissolved, P. W. Gates, who was president of the company, having decided to liquidate after the great fire which destroyed so large a part of the city. The result of this decision was the organization of the firm of Fraser & Chalmers, the members of the firm being Thomas Chalmers, David R. Fraser, Robert Anthony and David Marchant. Fraser & Chalmers commenced operations with 60 men, the shops covering an area of 60 x 145 feet. Two years ago, when the firm was merged into the Allis-Chalmers Company, employment was given to 1500 men at Chicago and 1000 men at the shops which had been built by the firm at

Erith, Kent, England. Mr. Chalmers was a citizen of Chicago for 60 years, having become a resident of the city when the population was but 4000, and he was not only thoroughly identified with whatever tended to its advancement, but was much interested in the development of the Middle and great Northwest. He was a man of strong convictions and fearless in his defense of the rights of man. He was a Presbyterian, a Mason and an Odd Fellow. Mr. Chalmers retired from active business in 1893, but retained an interest in the firm of Fraser & Chalmers until it was merged into the Allis-Chalmers Company.

## WILLIAM GARRETT.

After an illness of a few days, William Garrett of Cleveland, Ohio, inventor of the Garrett rod mill, died at Mt. Clemens, Mich., on Wednesday, July 15, aged 59 years. The immediate cause of his death was a paralytic stroke, but for some time he had been in poor health. Mr. Garrett was of Scotch parentage, but was born in England. His rolling mill career began in the works of Scotland. He started in the mill at 11 years of age, and at 16 was operating a guide mill. What the ordinary boy gained at school in daylight hours Mr. Garrett acquired by the hardest effort after his day's work was done. Coming to the United States in 1878 he found work with the Cleveland Rolling Mill Company, and was connected with their mills for the following five years. In 1882 he built the first mill of the Garrett type. It was the first rod mill in which a 4-inch billet was rolled into a No. 5 rod without reheating. Previous to this time it was the practice to use a 1½-inch or 2-inch billet. Mr.



WILLIAM GARRETT.

Garrett's process also involved the rolling of an ingot to a 4-inch billet without reheating, replacing the practice of reducing the ingot to a bloom, which was reheated before conversion into billets. The saving involved in these improvements was at that time about \$7 a ton. Mr. Garrett went to Pittsburgh in 1883, and in that year built the rod mill in the Oliver Wire Company's South Side plant. Returning to Cleveland in 1886 he built a rod mill for the American Wire Company. Later he was connected with the Joliet Steel Company at Joliet, Ill., building there a rod mill which later became one of the Illinois Steel Company's plants, and was then expanded into a twin mill, making an output which far surpassed any-

thing previously accomplished in this branch of rolling mill work. Rod mills were built by him for a number of other steel companies, and at present about 90 per cent. of the country's rod output is produced in Garrett mills. In 1897 Mr. Garrett permanently located in Cleveland and established the Garrett-Cromwell Engineering Company for the purpose of engaging in the construction of blast furnaces, steel plants and rolling mills. Associated with him in this enterprise were Horace W. Lash and J. C. Cromwell, who had won prominence as engineers. He was a member of the American Society of Mechanical Engineers, the Iron and Steel Institute of Great Britain and other engineering societies, to whose transactions he was a valued contributor. Possessing a decided taste for writing, Mr. Garrett frequently favored the trade with his views on current development. His style was trenchant, and his methods of expression were decidedly original. He was married twice. Two daughters survive the first marriage. His second wife, a son and daughter, also survive him.

#### NOTES.

ANDREW J. CRAWFORD, a well-known Indiana iron manufacturer and coal operator, died July 19, at his home in Terre Haute, Ind., aged 65 years. He was president of the Vigo Iron Works, the Terre Haute Iron & Steel Company and the Wabash Iron Company previous to their absorption in the Republic Iron & Steel Company.

WILLIAM F. ELLIS, civil engineer and one of the best known track builders of the country, died at his home in Somerville, Mass., the 16th inst., aged 51 years. He was the engineer in charge of a number of difficult pieces of track laying, including the North Terminal Station at Boston. His death was due to injuries received during the laying of the North Station tracks several years ago, for he never recovered from the effects of a second operation last November, made necessary by the effects of the injury.

P. M. ARTHUR of Cleveland, Ohio, grand chief engineer of the Brotherhood of Locomotive Engineers, dropped dead on July 16 while speaking at the banquet at Winnipeg, Manitoba, closing the annual union convention of the Brotherhood. He was 72 years old and a native of Glasgow, Scotland, coming to this country when a lad of 11. He became chief of the Brotherhood in 1873. For the first few years of his administration strike succeeded strike of the Brotherhood, and the organization had never had such an aggressive leader. In 1877 the Brotherhood won five strikes in six months, and a notable fact in connection therewith was that only one case of violence developed. After he had been chief for some time Mr. Arthur experienced a change in sentiment and method of administration. From a very aggressive man he became very unusually conservative, and this fact had marked his career since that time.

W. T. BOHANNON of Wilson Bohannon, manufacturers of locks, died last week at his residence, 773 Greene avenue, Brooklyn, aged 49 years.

ELIPIHALET W. BLISS, the Brooklyn inventor and manufacturer, died at his home, Owl's Head, Bay Ridge, Long Island, on July 21, after a week's illness of heart trouble. He was 67 years old, and was born at Cooperstown, N. Y. He became a journeyman machinist in Syracuse, N. Y., and Meriden, Conn., and rose rapidly to a responsible position in the latter city. He served honorably in the Civil War, after which he went to Brooklyn and established himself in business. Out of his original business grew the great machinery manufacturing plant of the E. W. Bliss Company. Mr. Bliss also founded the United States Projectile Company and was president of both corporations. He was identified with numerous other large enterprises.

Mule haulage is to be replaced by electric traction in the De Beers Mines, South Africa, an order having just been placed with the British Westinghouse Electric & Mfg. Company, Limited, for the supply of 12 four-wheel mining locomotives. The gauge being only 18 inches, the

motors have to be mounted clear of the wheels. The motor pinion meshes in the ordinary way with an additional intermediate gear wheel. The journals of the shaft carrying this gear wheel run in boxes working in pedestals over the main journal boxes of the locomotives, and rigidly connected to them. Thus the locomotive frame, which is supported on springs in the usual manner, is free to rise and fall on the axles and without disengaging the gears. The motors are hung on the shafts of the intermediate gear as if these were the ordinary wheel axles and the usual "nose" suspension is employed.

#### The Wheeler Forged-Rolled Steel Wheel Company.

The Wheeler Forged-Rolled Steel Wheel Company was organized in June for the purpose of engaging in the promising field of supplying the urgent demand for a one-piece car wheel of steel as a substitute for the ordinary chilled cast iron wheel under heavy steel freight cars. The general uncertainty of iron and steel castings is fraught with grave danger when used for car wheels under modern conditions of load carried and speed. It is impossible to submit each such cast wheel to a test sufficient to determine its safety. It is pointed out that with a forged and rolled wheel made under the Wheeler system of manufacture each and every wheel is put through such a severe manipulation that any imperfection in the ingot, or blanks, at each stage of the work will surely be detected and the piece rejected. The final work being a moderate annealing, a very uniform output can be depended upon by those responsible for the safety and lives of the traveling public. The forged and rolled wheel to be manufactured will also be a substitute for the expensive and many pieced steel tired or built up wheel. As to quality of metal, it will at least have the same characteristics as the steel tire of the several types of the latter wheel, being made of a solid, round ingot of the same standard quality, shape and diameter as those that tires are made of, as hard and safe as possible. Hence the product will have as much forging and rolling as a tire gets, which is essential to obtain the results in tread and flange wear now fairly acceptable to the railroad people.

The diameter of the ingots to be used will be 16 inches, thus giving 17 inches of work in drawing the wheel blank out to the finished diameter of 33 inches. The question of where the shrinkage cavities will be is well known in such an ingot, but in a casting of the shape of a wheel the cavities or blow holes are in the rim, which will weaken and destroy it for any practical use. Hence the wheel to be made by this company is in no sense an experiment, being the logical development of the steel tired wheel into one piece instead of many parts that become loosened under the heavy loads of modern steel cars, for which use the built up wheel was never intended. This new wheel is cheaper and gives more wear than the tired wheel. The forging of this integral wheel will be by both hydraulic press and steam hammer of powerful build, thus combining the advantages of both methods of forging. The wheel rolling mill will be more powerful than any tire mill in use, and will be able to roll the hard steel required (about six times as hard as wheel iron) at a uniform low cherry heat, which will avoid the necessity of running the risk of overheating, so prevalent where light machinery was used. The amount of rolling will be about 5 inches in diameter, thus insuring the metal being well worked.

A peculiar process of heat treatment for the forged blank before rolling is to be used, and which is said by engineers competent to decide to be the secret of success in one-piece wheel manufacture, "the want of which process heretofore being the reason for lack of success." This process, as well as the improved tire mill, which is adapted to rolling solid wheels, was developed in 1898 and patented two years ago by Frank A. Wheeler of Pittsburgh, Pa., formerly of the steel tire departments of the Latrobe Steel Company and of the Midvale Steel Company.

# The Iron Age

New York, Thursday, July 23, 1903.

DAVID WILLIAMS COMPANY, - - - - -	PUBLISHERS.
CHARLES KIRCHHOFF, - - - - -	EDITOR.
GEO. W. COPE, - - - - -	ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - -	HARDWARE EDITOR.
JOHN S. KING, - - - - -	BUSINESS MANAGER.

## The Gulf Ports and the Exports of Produce.

The most significant feature of the statement of the exports of domestic produce for the fiscal year ending June 30, 1903, published by the Bureau of Statistics within the last few days, is the continued wonderful growth of the Gulf ports as shipping points for grain. This is particularly notable in the movement of wheat, the total shipments of which for the fiscal year show a decrease of 40,000,000 bushels. While the Atlantic ports suffered more or less heavy declines, New Orleans practically held its 1902 record, exceeding New York by 400,000 bushels, while Galveston shows the remarkable increase of more than 6,000,000 bushels, the total exports from that port being 16,308,842 bushels, as compared with 17,836,356 bushels at New Orleans and 17,403,409 bushels at New York. The comparison of totals for the last two fiscal years shows that New York fell off 5,000,000 bushels, Boston about the same amount, Baltimore 11,000,000 bushels, New Orleans 3,000,000 bushels and Philadelphia 6,000,000 bushels. The total exports of wheat at all ports for the fiscal year 1903 aggregate 113,454,452 bushels, as compared with shipments of 153,892,723 bushels during the fiscal year 1902.

In some respects the movement of corn is even more remarkable, as favoring the Gulf ports. It should be noted that the year's total outgo is 74,360,370 bushels, as against 26,324,268 bushels during the preceding fiscal year. In this increase Baltimore and New Orleans shared to the extent of 12,000,000 bushels each, while New York participated to the extent of 5,000,000 bushels, and Newport News to the extent of 2,700,000 bushels. During the month of June, 1903, however, New York showed a very large increase, as did also the grain which was cleared through the Chicago Custom House. Indeed, of the total shipments of 5,800,000 bushels during June, 3,800,000 bushels were from the Custom House districts of New York and Chicago, the relatively small shipments from the Southern ports during June being due to the warm weather, which is a distinct handicap to the Gulf ports; but even so the shipments were considerably in excess of the corresponding month a year ago. It will be noted that next to Baltimore New Orleans is credited with the largest shipments of corn of any port, over 16,500,000 bushels being shipped from Baltimore, about 14,500,000 bushels from New Orleans and less than 14,000,000 bushels from New York. The small exports of corn in 1902 were, of course, due to the 1901 harvest failure, and figures for the fiscal year of 1903 show an encouraging return to normal conditions.

In the total exports of all breadstuffs, however, New York is without a peer, and will probably long continue to hold this distinctive position. Nevertheless the wonderful and rapid growth of the Gulf ports is worthy of special notice. For the entire fiscal year of 1903 the total exports of all breadstuffs were valued at \$213,043,296, against \$205,022,669 during the preceding year. A large percentage of the total gain was made by the Gulf Ports, New Orleans jumping from \$17,700,000 to \$24,800,000, and Galveston from \$7,600,000 to \$15,400,000, in round numbers. New York participated in the increase to the extent of

\$3,000,000. Baltimore showed a fractional decrease, as did also Philadelphia, while Boston and Newport News suffered a decline of about \$4,000,000.

In all export produce movements from this country, however, cotton continues to hold the most conspicuous place, and it will be noted that during the last fiscal year the value of exports of this staple constituted more than 40 per cent. of the entire exports of domestic produce, exceeding the combined value of breadstuffs by \$103,000,000, in round numbers. The export price of cotton during the entire fiscal year has been higher than during the preceding year, the increased total being due largely to this greater value, but it will be noticed that there was an increase of over 69,000 bales in the total exports. For the full year shipments abroad amounted to 6,932,101 bales, valued at \$315,847,105. The increase in money value, compared with the preceding year, was \$25,705,754. It is significant that notwithstanding the export price of cotton was 12.1 during June, against 9.3 during June of the preceding year, there was a decrease in the total value of cotton during June this year of \$1,194,626. This, of course, reflects the results of the antics of the cotton corner manipulators at the South during June, and is illustrative of how manipulation may obstruct the normal channels of trade.

In the movement of provisions, including cattle and hogs, the Southern ports, of course, with the exception of Baltimore, occupy minor positions, the Atlantic ports, especially New York and Boston, being the most important shipping points. Considered as a whole, there was a marked falling off in the exports of provisions, the totals being \$188,857,611 this year, against \$210,137,627 during the preceding fiscal year. In the shipments of canned and cured beef, however, there was an increase, while all other items show decreases of more or less importance.

The total exports of all produce, including breadstuffs, cattle and hogs, meat and dairy products, cotton and mineral oils, for the fiscal year were valued at \$782,866,305, showing an increase of over \$6,500,000, as compared with the foreign shipments during the preceding year. A gain of more than \$25,500,000 in the value of cotton and a decrease of more than \$21,000,000 in the value of meat and dairy products were the most important changes of the fiscal year.

## Strikes Depress High Class Securities.

The widespread strikes of the present year have contributed no little to the depression of values of securities. No section of the country has been free from labor troubles, and often the number of workingmen involved has been large, and their period of voluntary idleness protracted. While business interests have been seriously affected, one result of the idleness of so many wage earners has not received much attention. This is the liquidation in high class stocks and bonds by the savings banks to keep themselves well supplied with cash to meet the demands from workingmen, who constitute the great body of their depositors. The savings banks have been accumulating very large amounts of money during the past few years, owing to the general employment of the people and the high rates of wages paid. Nearly every workingman has been able to lay aside a good surplus. The strikes of this year have, however, compelled many to withdraw part or all of their savings, and this has caused the savings banks to protect themselves by selling securities, which in all cases consist of the best class of bonds or of strictly gilt edge stocks. If liquidation of this character had occurred at a time of strength in the stock market it would perhaps have been without much effect. But coming as it does when prices of securities

are falling so rapidly that investment buying is checked, the marketing of these high class stocks and bonds can only be done at some sacrifice. The shrinkage in such securities helps to intensify the growing fear that something serious is impending.

It is a matter of great congratulation that the continued liquidation in stocks and bonds has thus far led to no failures of any consequence. It is amazing that so great a shrinkage could occur as that of the past six or nine months without precipitating some serious failures. The immunity of banking circles from troubles of this character is giving great hope to all concerned that the country may be able to pass safely through this gloomy period of liquidation. On the one hand, the stream of liquidation, it may be assumed, cannot continue indefinitely, and on the other hand, the strikes are rapidly coming to an end and idle workingmen will again become depositors in the savings banks instead of drawing on their accumulations. What the country now needs is strict attention to legitimate business on the part of everybody, from the great capitalists down to the humblest workingmen. We have had a period of wild excesses in speculative matters as well as in labor movements, and if the country could have a respite of a year or two from both breeders of disturbance it could then again get into satisfactory shape.

#### Practical Factory Sanitation.

A recent bulletin of the Department of Labor, on "Factory Sanitation and Labor Protection," merits a much wider and more general circulation than the method of distributing Government publications promises to secure for it. While by no means a comprehensive discussion of the subject to which it relates, and touching only a few of the many evils incident to the neglect in workshops of precautions essential to health and comfort of men and women employed therein, it is suggestive and will well repay thoughtful study by every employer of labor. It will make it reasonably evident to the appreciative reader that there is room for a new profession—that of sanitary engineering applied to workshop conditions. It is one which demands the preparation of large experience and an intimate knowledge of industrial conditions. Not only every mechanical trade, but every shop, presents problems of its own which, if solved intelligently, must be dealt with with reference to facts as one finds them, with men as their social environment has made them, and with localities according to climate, humidity and whatever must be considered in the judicious selection and development of a manufacturing site.

Successful workshop sanitation calls for a knowledge of many sciences and practical familiarity with economic conditions. The amateur in such matters is likely to be found an impractical and unsafe adviser. The zeal of the radical reformer needs to be tempered by the discretion which is gained only from experience in dealing with masses of average men who are more likely at first to obstruct than to co-operate with measures designed to conserve health and promote comfort. Often the attainment of satisfactory conditions is possible only by gradual approaches, time being given for the formation of new habits and the gradual raising of the standards of judgment in matters pertaining to comfort and decency. The employer who, impressed with the idea that his workshop conditions are not what they should be, goes too fast and too far in an effort to make them "ideal," is usually disappointed in the outcome, with the result that he abandons further effort, regrets the expense and trouble he has already incurred, and decides that since his work people are too indifferent or too careless to co-operate

with him in carrying out his plans for their benefit, he will in future remain content with what they find satisfactory. This is superimposing one mistake upon another, both of which might have been avoided had he put himself under wise guidance and taken only such steps as would have commanded the co-operation of his work people. A certain amount of pressure is usually necessary to enforce on the part of the decent a proper respect for the rights of the decent. This cannot be effectively exerted if too many new rules need to be enforced at once. Practical tenement house reform, which we now have in New York for the first time, illustrates the fact that confidence in any form of disinterested benevolence is a plant of slow growth. What is now being accomplished in improving the domiciliary conditions of the poor in New York would probably be impossible if it had not been approached through years of effort, most of it apparently without benefit and destructive of altruistic impulses on the part of the official and the philanthropist.

It should be remembered, however, that there is nothing altruistic in the creation and maintenance in workshops and factories of conditions favorable to health and comfort. The efficiency of labor employed indoors in monotonous occupations depends very largely upon the minimization of dangerous and uncomfortable conditions. The man who is dull and logy, who must fight to keep himself awake, and whose intelligence is blunted and his strength sapped by continued breathing of a vitiated or poisoned atmosphere, cannot be an efficient workman, and is not cheap even at low wages. Pure air is indispensable to the normal man, and this is not always easy to obtain in crowded neighborhoods, even when "all outdoors" is drawn upon. It depends a good deal upon what stratum of the atmosphere is tapped, so to speak, whether what is had is stimulating and invigorating or depressing and enervating. This is a matter of expert judgment, assisted by chemical and bacteriological analyses. Factory and workshop ventilation presents no great difficulties if undertaken intelligently, but it involves a good many things which must be taken into account, and which, if overlooked or neglected, will destroy the best laid plans. The air vitiated by lung exhalations, by dust and by smoke and fumes must be disposed of before room is given either for fresh air to enter or for it to be of service when it does enter. It is obvious that specific suggestions as to ways and means would be not merely valueless but misleading. Each building, and very often each room in the building, has to be studied as a problem by itself, and dealt with as conditions peculiar to itself and to the occupations conducted within it, its normal population and the character of its occupants may demand. As the rule, factories are so built as to make good ventilation as an afterthought a matter often involving great ingenuity. The employer of labor does not, however, need to consult others as to whether the conditions to which his work people are exposed during working hours are good or bad. He can tell this for himself by walking through the shops and noting not merely his own sensations but what he may see without effort. If led by the instinct of self interest into well directed effort to make the conditions as good as he can, the results will be abundantly and satisfactorily compensatory.

The condition of the floors will usually be found to demand thoughtful attention. Floors which cannot be kept clean, and into which the dirt and grime of years are ground, should be subject to indictment as public nuisances, "dangerous to life and detrimental to health." When such a floor becomes the ceiling of the room below,

and every movement over or across it sends its load of dirt sifting down through cracks and knot holes upon those below, the danger is doubled. No material is suitable for a factory floor which cannot be kept clean, and upon which it is not possible to turn the stream from a hose as often as it is necessary. Accumulations of rubbish on floors should be avoided. They are a source of many dangers, and when they are found it is safe to conclude that the shop management is slack. A dirty, littered, dust laden shop cannot possibly be a safe shop to work in, and labor employed therein cannot be utilized to good advantage.

Shop illumination is also of great importance. A dark shop, or one with strong and blinding cross lights and deep shadows, is not one which can be operated to advantage. Comparatively few shops are so well lighted that the illumination could not be improved, especially in cases where the growth of an industry has caused shop buildings, old and new, to form unexpected groupings. Probably nothing pays better than plenty of light of the right kind, and where daylight cannot be depended upon electricity in its later developments is an efficient substitute, costing less than it is worth when needed at all. At this season of the year the question of shop lighting commonly gives very little trouble and is likely to be forgotten; but the fact should be borne in mind that during at least six, and in some cases seven, months out of the twelve it is a matter of very serious concern, and that the time to provide light is when it is not immediately needed.

Shop heating is a matter worthy of more consideration than it is usually given. Work indoors is rarely done to advantage in a temperature much below 60 degrees F., and the man at the bench who has cold feet and hands is not an efficient mechanic, however faithful to his responsibilities. An artificial temperature maintained above 75 degrees is as unsuitable for sustained industry as one below 60 degrees. Men can and do work in temperatures very much higher than this, but it is in short shifts and calls for the putting forth of supreme effort to accomplish results, which is very different from well directed industry sustained through nine or ten hours. Such matters do not often automatically regulate themselves. A foreman will find it advantageous to keep an eye to the thermometer in the shop under his charge.

Toilet facilities cannot be discussed profitably on broad lines. What may be proper and sufficient depends largely upon the class of labor employed, but in every instance decent and strictly sanitary appliances are found to be more satisfactory than those which revolt and shock workmen not brutalized by habitual contact with them. It may be assumed that if better than average facilities are provided the average man will not take great trouble to preserve them in ideal condition until it is impressed upon him that it is to his interest to do so. This means that the employer who wants his washrooms and toilet rooms to be in a condition permitting inspection at all times must make provision for having them taken care of.

Where matters of this kind are intrusted to wisely selected and properly qualified experts much better results are reached than if they have spasmodically engaged the attention of one after another of the official staff, and been neglected in the intervals. The large manufacturing industries are beginning to handle the problems of shop sanitation wisely and comprehensively, but in the smaller shops the conditions usually found warrant the suggestion that there is room for the new profession of expert in the department of sanitary engineering which deals especially with the problems of

the workshop. It is not impossible that in the near future organized labor will take a more intelligent interest in matters affecting the life and health of workmen, and insist under good advice upon the correction of conditions calling for improvement. This would be a wise and beneficent use of the power of organization, and in the hands of intelligent leaders would make for good.

### Labor News.

After a strike, that lasted a week and threatened to spread to all the shops on the line, the machinists at the Big Four shops at Wabash, Ind., have returned to work. The trouble arose over the posting of notices by the master mechanic for the men to work ten instead of eight hours a day. They refused, on the ground that it was a violation of the agreement between the railway company and the Machinists' Union, the contract providing for a nine-hour day and time and a half for overtime. The men had been working eight hours. The agreement, however, included a provision that the men should work more than nine hours if sufficient men could not be obtained by the company to keep the rolling stock in condition with a nine-hour day. A conference was arranged between the head officers of the company and the union, and it resulted in an arrangement for the company to engage 60 additional machinists in the different shops in the whole district, the present employees to work ten hours a day until the added force gets to work.

The strike of the boiler makers in the Pittsburgh district, which has been in existence since May 1, has been settled. The men originally demanded \$4 a day for eight hours, which the employers refused, offering the men \$3.78 a day for nine hours, or 42 cents an hour. The men refused to accept this offer and a conference was arranged at which the manufacturers agreed to pay \$3.78 for nine hours until January 1 next. After that date the men will get \$3.60 a day for eight hours. The new agreement is to run continuously from January 1 next, unless either side should give four months' notice of a desire to change the scale. An arbitration clause was inserted in the agreement to prevent further strikes.

Building operations are being resumed in New York City, owing to the acceptance of the agreement of the Employers' Association by the majority of the unions. Under the leadership of Sam Parks, the business agent of the Housesmiths' and Bridgemen's Union, a number of the men are still holding out, but it is believed that the backbone of the opposition to the employers' plan has been broken, and that the employers will have scored a complete victory in a short time. Efforts are being made to organize another Board of Building Trades, to be composed of the unions which have been expelled from the original board, owing to their acceptance of the agreement of the Employers' Association. It is possible, however, that a decision may be reached by the delegates of the expelled unions, to the effect that a regularly organized Board of Delegates will not be necessary, as under the arbitration agreement adopted there will be no sympathetic strikes. With the unions working under the agreement which they made with the employers, an Arbitration Committee, appointed by the various unions and the employers, to act in case of disputes, is all that will be necessary in the way of a central board.

The boilermakers' strike at the works of the Springfield Boiler & Mfg. Company of Springfield, Ill., has been practically defeated, through the co-operation of the National Metal Trades Association. For four weeks the operations of the plant were practically at a standstill, as a result of the interference on the part of the strikers. The company joined the National Metal Trades Association, and Commissioner E. F. DuBrul immediately took matters in hand. He organized a citizens' alliance in the city of Springfield, which is being enthusiastically supported by the manufacturers of the town. Mr. DuBrul then secured a crew of boilermakers to take the places of the strikers, and the works are now in operation. Several of the strikers have applied to return to work, but were not accepted by the company, as better results were being obtained from the new men.

## The Steel Billet Pool.

The leading makers of steel billets in the United States have revived the association which existed some years since, the numbers having been much decreased, as the result of the consolidations. The members now are the United States Steel Corporation, Jones & Laughlin Steel Company, Wheeling Steel & Iron Company, Cambria Steel Company, Pennsylvania Steel Company, Lackawanna Steel Company and Maryland Steel Company. Meetings are held at New York every day, at which inquiries and sales are regularly reported. The agreement refers exclusively to prices, which have been established for the principal points of consumption. The standard is the Bessemer 4 x 4 inch billet and bloom, carbons up to 0.20 per cent., the prices established being: Pittsburgh, Wheeling and the Valleys.....\$27.00 New England points.....29.25 New York.....28.75 Philadelphia and Baltimore.....28.25 Albany.....28.75 Buffalo.....27.75 Harrisburg, Pa.....28.00 Cincinnati.....27.75 St. Louis.....28.75 Chicago.....28.00 Cleveland.....27.50 Richmond, Va.....28.75 San Francisco.....39.25 Pueblo, Col.....40.25

The following extras have been established:

Open hearth billets and blooms.....	\$1.00
Standard Bessemer billets, 0.21 to 0.60 carbon.....	1.00
Standard Bessemer billets, 0.61 to 1.00 carbon.....	2.00
Standard Bessemer billets, 3% inches square and smaller.....	1.00
Slabs, 2½ inches and thinner, 24 inches long and shorter, 20 square inches in section or less.....	1.50
Cutting billets to short lengths.....	.50
Axle billets.....	1.00
Open hearth forging billets, extra above open hearth price.....	3.00
Sheet bars or tin plate bars.....	1.00

It is understood that thus far the tonnage placed has not been large.

## Pennsylvania Industrial Statistics.

HARRISBURG, PA., July 21, 1903.—The report of the Pennsylvania Bureau of Industrial Statistics for the year ending June 30, 1903, gives statistics regarding 771 industrial establishments, as compared with the year 1896. This report was prepared by C. B. Penman, statistician and assistant chief of the bureau, under direction of the new chief, Robert C. Bair. In 1896 these 771 establishments employed 129,240 people, but at present they employ 293,927 persons, or a gain of 57.8 per cent. In 1896 there were paid in wages \$49,430,808, and in 1902, \$98,432,570, or a gain of 99.1 per cent. There was a gain of 23 working days in 1902, and the average yearly earning increased from \$382.47 to \$482.68, or 26.2 per cent. The market value of the productions of these 771 establishments in 1896 was \$185,249,648, as against \$421,141,415 in 1902, or a gain of 127.5 per cent.

In 1896 the State produced 4,026,350 gross tons of pig iron, but this year's report shows a tonnage of 8,111,642 gross tons, or a gain of 101.4 per cent. The value of the output of pig iron in 1896 was \$45,172,039, and in 1902 it was \$126,857,231, a gain of 188.3 per cent. In 1896 there were 11,580 persons employed in the iron and steel establishments, and in 1902 there were 17,101 employees, a gain of 47.2 per cent. The average daily wage has increased in the seven years from \$1.37 to \$1.89, or 37.9 per cent. In 1896 the average yearly earnings of each iron workman was \$396.30, and in 1902 it had increased to \$595.97, a gain of 50.4 per cent.

The production of steel in the State has kept pace with the times. In 1896 it was 3,345,529 gross tons, and in 1902 it was 8,511,195 tons, a gain of 154.4 per cent.

In 1902 Pennsylvania produced 9,429,365 gross tons of finished rolled iron and steel product, such as rails, structural shapes, nails, spikes, plates, sheets, rods, bars, hoops, bands, &c. The capital invested in plants producing a rolled product was \$123,951,317 in 1896, and \$247,870,718 in 1902, or a gain of 99.9 per cent.

The total amount of wages paid workmen employed in 1902 was \$60,721,868, as against \$23,832,628 in 1896.

The rolling mills alone paid for labor in 1902 \$36,889,230 more than in 1896, or a gain of 154.8 per cent., and 95,720 workmen were employed, a gain of 78.7 per cent. over 1896. The average yearly earnings per man was \$189.79 more in 1902 than in 1896, and the average daily wage rose from \$1.77 to \$2.23.

The manufacture of tin plate has been advanced very rapidly, and now compares more favorably than any of the other industries during the time in which comparisons are made. There was \$10,858,403 invested capital in 1896, or an increase of 109.4 per cent. over 1896. The production has increased 270,137,102 pounds over 1896, and the value has increased \$11,478,944 over 1896. But 3194 persons were employed in the tin plate works in 1896, but in 1902 there was 8905, or 178 per cent. increase. The workmen in 1902 were paid \$4,506,105, a gain of 213.5 per cent. over 1896. The average yearly earnings was \$502.02, an increase of \$49.47, and the average daily wage has increased from \$1.80 to \$2.25.

E. J. S.

## PERSONAL.

Calvin W. Rice, who since May, 1902 held the position of second vice-president of the Nernst Lamp Company of Pittsburgh, has resigned. T. H. Bailey Whipple, who has been associated with the Sawyer-Man Electric Company, is assistant to the second vice-president.

The Field-Evans Iron Company have increased the selling force of their Chicago branch, having employed John T. Wheeler, recently Western representative of Adam Weber Sons and previously purchasing agent of the Sargent Company of Chicago.

D. G. Farragut has been appointed representative in the Southern Republic of the Pressed Steel Car Company, with headquarters in Mexico City.

W. W. Bishop, formerly with the American Tool Works Company and general manager with the Philadelphia branch of the Fairbanks Company, has taken charge of the machine shop department of the Fairbanks Company in the Pittsburgh district. Mr. Bishop for some time past has represented the American Tool Works Company of Cincinnati in Pittsburgh.

Joseph E. Schwab has been elected a director of the Commonwealth Trust Company of St. Louis.

F. N. Hoffstot, president of the Pressed Steel Car Company, has been elected a trustee of the Continental Trust Company of New York.

G. W. Hamilton has been appointed assistant superintendent at the Bay View works of the Illinois Steel Company, in succession to Richard B. Charlton, appointed superintendent.

W. O. Jacquette has been elected president of the Southern Car & Foundry Company.

John K. Cooke of the Cooper, Weigand & Cooke Company, at Delawanna, N. J., has returned to the Passaic Steel Company, Paterson, N. J., as superintendent.

The injuries which Wm. Lodge of the Lodge & Shipley Machine Tool Company of Cincinnati received recently while driving, were fortunately not as serious as thought to be at the time. While he was severely scratched and bruised, Mr. Lodge is not suffering any serious injury. He expects to spend the latter portion of this week at business and then leave for his summer residence.

Daniel McGary, formerly general master mechanic for the American Steel Hoop Company, has been appointed Pittsburgh representative of the Southwark Foundry & Machine Company of Philadelphia, with offices in the Westinghouse Building, Pittsburgh.

J. Mitchell Clark of Naylor & Co., New York, has returned from a trip to Europe.

J. F. Schummer died at his home in Hamburg, N. Y., June 22 of acute congestion of the brain after an illness of two weeks. Mr. Schummer was 46 years of age and had been in the hardware business in Hamburg for the past 25 years. He leaves a widow and four children, the oldest, J. F. Schummer, Jr., who will continue the business established by his father.

## MANUFACTURING.

### Iron and Steel.

The new mills of the Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa., are completed, and fires will be started in the open hearth department this week. Three weeks later the rolling mills will be put in operation. About 200 additional men will be employed.

We are officially advised that all the iron and steel plants, wire and wire nail mills in the Ashland, Ky., district are now in full operation, with possibly one small exception. The plants in this district are being operated, as heretofore, on a nonunion basis.

Referring to the blowing out of both stacks of the Andrews & Hitchcock Iron Company, at Hubbard, Ohio, we may state that one furnace was blown out to put it in shape to connect up some new stoves that are being built, and the other furnace is out on account of necessary repairs to the lining. These repairs and improvements are being pushed to completion, and the furnaces will resume blast as early as possible.

Temple Furnace, near Reading, Pa., is being relined and will be ready for operation about August 1.

In order to keep up with orders the portion of the Standard Steel Company's axle mill, at Burnham, Pa., which was not damaged by the fire of two weeks ago, is being worked night and day. The burned portion is being already rebuilt.

The Reading Iron Works, at Danville, Pa., have been shut down for extensive repairs and improvements. In the 12-inch mill new rolls are being set up, new shears installed and the hot bed increased.

The American Sheet Iron Mills of Phillipsburg, N. J., resumed operations on Monday of last week, after having been shut down for several months.

The new drafting rooms of the Pennsylvania Steel Company, Steelton, Pa., were completed last week and the old quarters vacated. Orders for the week were up to the average. The company are manufacturing structural iron and bridge work for the Pennsylvania Railroad Company, for use on the new Petersburg branch. All of the blast furnaces are working full time.

The Sweet's Steel Company, Syracuse, N. Y., having outgrown their present plant, will move to Williamsport, Pa., where a new plant will be erected. The banks of that city have underwritten bond issue for \$150,000 for the erection of the buildings, work on which will be started at once.

The Portland Iron & Steel Company, Portland, Maine, have started the rebuilding of their plant, which was destroyed by fire some time ago.

At a recent meeting of the stockholders of the Cumberland Steel Company, Cumberland, Md., the following directors were elected: Merwin McKaig, Robert Shriver, William Pearre, William C. McKaig, Robert R. Henderson, A. Hunter Johnson, Albert Charles and W. J. Muncaster. Officers were elected as follows: Merwin McKaig, president; W. J. Muncaster, vice-president and general manager, and Albert Charles, secretary and treasurer.

### General Machinery.

Shafting, pulleys, hangers and considerable other machinery are required by the Paris Mfg. Company of South Paris, Maine, who are building an addition to their plant 100 x 120 feet. The company manufacture sleds, children's wagons, chairs, swings, &c.

The Manchester Locomotive Works of Manchester, N. H., are sharing with the Providence Locomotive Works the prosperity which has come since the American Locomotive Works absorbed the properties. The Manchester Works are very busy; in fact, could not be busier. Additions have been built whenever possible, the lack of available land restricting growth which otherwise would have been considerably greater. More than double the number of men are employed compared with two years ago, when the property changed hands. The fire engine business of the works has grown very rapidly.

The W. R. Colcord Machinery Company, St. Louis, Mo., with W. R. Colcord, J. H. Bentzen and G. W. Garries as incorporators, have been organized with a paid up capital of \$20,000, to succeed the company of the same name formerly owned by W. R. Colcord. Business will be conducted as heretofore in the manufacture of metal working machinery and machine shop equipment.

C. W. Thomas of the Roe Stephens Mfg. Company, Detroit, Mich., has purchased the Michigan Brass & Iron Works, located at Springwells. The purchase price was \$331,000 for the property and plant, which consist of 6 acres of ground, occupied by iron and brass foundries, machine shops and brass finishing shops. The sale was made by the Palms Estate—Dr. J. B. Book and E. F. Palms. Mr. Thomas has also purchased the Gilbert, Wilkes & Co. engineering plant at Denver, Colo. With him in the latter enterprise are Claude Thomas, his son, and Harry Woolfenden, both of whom are electrical and mechanical engineers.

The Murray Iron Works, Burlington, Iowa, are making a number of installations at their plant, including an electric traveling crane and dynamo.

The Valley Iron Works, M. & E. Garland, proprietors, Bay City, Mich., contemplate soon to make improvements to the Smalley Bros. & Co. plant, recently purchased. It is the intention to replace part of the old buildings, one of which will be the foundry, with new structures. They manufacture steam engines and saw mill machinery and will also carry a number of specialties.

The new loom company, consisting of Edward D. Thayer, Jr.; George Crompton, Randolph Crompton and William B. Scofield of Worcester, Mass., announce that they are in the market for machine tools. The organization of the company is not yet completed and incorporation not accomplished, but the project has gone along far enough to make it certain that the manufacture of looms will begin within a few months. The site of the business is not determined, but it will very likely be in the large two-story brick building on Cambridge street, which is owned by the Crompton Estate.

The Johnson, Prentice Company of Worcester, Mass., have begun the manufacture of machine tools, and are already taking orders for a new cutting off machine and a saw sharpener to accompany it. The new shop is on Millbury street, not far from the shops of the Prentice Bros. Company. The building which they occupy is 40 x 60 feet and two stories high. Power is furnished by a gasoline engine. The concern are doing business as a firm, the members of which are H. V. Prentice, superintendent of the Prentice Bros. Company; A. I. Johnson, and A. E. Newton, mechanical engineer for the Prentice Bros. Company. The firm have been conducting a scrap metal business for a number of years, but the machine shop is an entirely new departure.

The Sizer Forge Company, Buffalo, N. Y., are closing for the equipment of the new addition to their plant, including a 12-ton steam hammer and a 30-ton electric traveling crane, purchased from the Morgan Engineering Company of Alliance, Ohio. The building will be of steel construction, 96 x 190 feet, will increase the facilities 30 per cent., and will enable them to handle forgings up to 30 tons.

The Titusville Forge Company, Titusville, Pa., are adding to their foundry equipment a large steam hammer and several jib cranes, and to their machine shop two lathes, a large slotter and two cold saws. They are also enlarging their blacksmith shop, 50 x 100 feet. They have several important contracts in hand and general business has so increased that an extension of the works is contemplated by the fall.

Edward Thos. Keenan of Chateaugay, N. Y., who had inquiries out for the equipment of his proposed new machine shop, advises us that he has decided to abandon the project.

The Keystone Foundry & Machine Company, Lebanon, Pa., will erect a large building for nickel plating machine parts and for the storage of bicycles which they manufacture.

The new plant of the Williamsport Clutch & Pulley Company of Williamsport, Pa., will be completed and put in operation within a month.

Some little machinery, including a small shaper, one or two lathes and a good sized milling machine, are required by the Jarvis Engine & Machine Works of Lansing, Mich. The company have purchased a 1 1/4-acre site on the Lake Shore & Michigan Southern Railroad, where they will erect a new plant, consisting of brick machine shop, 30 x 66 feet, with a wing, 56 x 110 feet, and a separate power house. The present equipment will be moved into the new buildings when completed, and as soon as the company are located in their new quarters they will be ready to buy the additional tools. The company manufacture the Jarvis low water alarm and make a specialty of repair and custom work. They report business as very good.

The Stickel Machine Company, Williamsport, Pa., have incorporated with a capital stock of \$500,000 for the manufacture of a roller journal bearing, the invention of Dr. Jacob Stickel of that city. It is stated that the bearing is simple in construction and requires no lubricant. Tests made in the Williamsport Planing Mill and on a trolley car in that city have proved very satisfactory. A meeting of the stockholders will be held in August, when a location for the plant will be decided upon. It is probable that a site in the West will be selected, as most of the stock is held in that part of the country. The officers are Hon. Charles H. Aldrich of Chicago, president; Dr. Jacob Stickel, vice-president and general manager; N. McKusick of Williamsport, secretary; Henry B. Eberly of Williamsport, assistant secretary; George A. Lashell of Pittsburgh, treasurer, and William H. Foster of Chicago, attorney.

The Ingersoll Milling Machine Company, Rockford, Ill., have completed plans for an addition to their plant. Contracts have not yet been let.

The Grove Foundry & Machine Company, Pittsburgh, Pa., have incorporated with a capital stock of \$25,000. The directors are W. H. Grove, S. E. Eccles, Pittsburgh; W. H. Pfahl, Jr., W. F. McCreat and A. H. Kappeler of Beaver, Pa.

### Power Plant Equipment.

James Knox Taylor, Supervising Architect, Treasury Department, Washington, will receive bids until August 19 for a low pressure steam heating plant for the United States court house, post office and custom house at Newport, Vt.

The Harrisburg Foundry & Machine Company, Harrisburg, Pa., have received the following orders: Senator Clarke's residence, Schenectady, N. Y., 350 horse-power engine; University of Pennsylvania, Philadelphia, 100 horse-power engine; Davies & Thomas, Catasauqua, Pa., 500 horse-power engine.

The Supervising Architect, Treasury Department, Washington, will receive bids until August 4 for a heating and ventilating plant for the National Bureau of Standards.

#### Foundries.

The Whittier Machine Company, South Boston, Mass., who are rebuilding their foundry, which was destroyed by fire last April, will install a new 10-ton traveling crane, with 2½-ton auxiliary, furnished by the Case Mfg. Company, Columbus, Ohio; a No. 11 Buffalo Forge Company blower, and a No. 8 Whiting cupola.

A plan is under way to reorganize the Economy Foundry Company of Syracuse, N. Y., which recently failed on account of large losses on Government contracts. It is proposed to organize a new company, with a capital stock of \$200,000, half 6 per cent. preferred stock, and to issue sinking fund bonds to the amount of \$100,000, the creditors to take the preferred stock in exchange for their claims, and the bonds to be sold to pay off the mortgage on the property.

The Davies Car Wheel Company, recently organized, will build a large foundry at Moundsville, W. Va. They will manufacture the Davies boltless steel tired car wheels, the Davies interlocking key car wheel, and charcoal chill tread traction car wheel and other railroad specialties. The company were organized and promoted by the Wheeling Board of Trade.

The Fillmore Avenue Foundry & Iron Works, Buffalo, N. Y., have just completed an addition to their foundry, enabling them to increase their output of light work very materially.

The Union Steel Casting Company of Pittsburgh are making some extensive improvements and additions to their plant which will very much increase its capacity. It is said that they will spend \$200,000 or more in enlarging their plant. The officers are C. C. Smith, president; S. H. Church, vice-president; G. W. Eisenbeis, treasurer, and G. W. Smith, secretary.

The Moore & White Company, Philadelphia, Pa., have incorporated with a capital stock of \$10,000 for the manufacture of iron and steel castings and forgings. The directors are J. W. Moore, J. A. White and S. A. Hibbs.

#### Bridges and Buildings.

Work on the new coaling plant at the Charlestown Navy Yard has just begun, though the contract was let a long time ago, calling for the completion of the plant March 3 of last year. The only reason for the delay was the nondelivery of the steel, for the foundations were ready to receive the superstructure several months ago.

#### Fires.

The fiber mill of the By-Products Paper Company, Mayville, N. D., was burned July 18. The loss is placed at \$60,000.

A recent fire at the plant of the Pittsburgh Foundry & Machine Works, Pittsburgh, Kan., did \$15,000 damage.

#### Hardware.

The Jonas Knoll Bicycle & Washing Machine establishment of Lebanon, Pa., will locate a branch factory in Canada, under the direction of Gideon K. Shanaman, who has left to select a site. The Knoll wheel will be manufactured there.

The International Silver Company resumed the operation of their factory "D," in Lyons, N. Y., Monday morning. The plant had been shut down since July 1 and while thus closed repairs were made. Superintendent Styer will make a new line of designs.

The Schatt-Morgan Cutlery Company of Titusville, Pa., have resumed operations after a shut down of ten days, during which extensive repairs to the buildings were made. The company will shortly issue a handsome illustrated catalogue for the use of the trade.

**Denver Steel Casting Company.**—The recently organized Denver Steel Casting Company, Denver, Col., will erect a new plant for the manufacture of steel castings, consisting of a main foundry, 160 x 300 feet; machine shop, power house, pattern shop, offices, laboratories and storage house. The power plant equipment will comprise 50 horse-power of high pressure boilers, 200 horse-power Corliss engine, 200 horse-power generator, air compressor, pumping outfit and accessories. The plant will be equipped throughout with modern tools. Plans and specifications for the entire equipment are being prepared by C. L. Buckingham, constructing engineer, Coronado Block, Denver, who is secretary and treasurer of the new company.

John F. Link, recently appointed traffic manager of the Standard Steel Car Company at Pittsburgh, has resigned and the office has been abolished.

#### Iron and Industrial Stocks.

The industrial stocks suffered seriously during the past week. Liquidation was not only heavy in the United States Steel stocks, but also in a number of the less prominent securities of this class. It is difficult to assign any reason for the heavy outpouring of the stock of the United States Steel Corporation, which on Tuesday sold \$2 per share under the panic price of the common on May 9, 1901, and within \$1 per share of the low price on the preferred. The business of the corporation continues very satisfactory, the mills having orders on their books which will keep them busy for several months, and their financial condition is also beyond question. It is rumored that some of the interests concerned in the formation of the corporation have found it necessary to part with large holdings which they acquired at the time of the organization, but this, of course, is merely conjecture. It is further claimed that a considerable part of the selling of the Steel shares is due to short sales made by the bear element on the Stock Exchange, for the purpose of depressing the general market. Whatever the cause for the great decline in the value of these stocks may be, the effect is nevertheless quite discouraging. The sales of United States Steel common for five days of the week reached the large total of 280,000 shares, and of the preferred over 100,000 shares. The following figures show the high and low point reached by the most active iron and steel stocks during the past week: United States Steel, common 26½ and 22, preferred 77½ and 70, ex-dividend; American Can, common 5 and 37½, preferred 42 and 39½; American Car & Foundry, common 35½ and 33½, preferred 87½ and 85½; American Locomotive, common 20½ and 17, preferred 88 and 84; Colorado Fuel & Iron, 60 and 49; Crucible Steel, common 12½ and 11, preferred 78 and 74½; Dominion Iron & Steel, 15½ and 14; Pressed Steel, common 48½ and 45; Railway Spring, common 28 and 26; Republic, common 13½ and 12½, preferred 72 and 67; Sloss-Sheffield, common 39½ and 38; Tennessee Coal & Iron, 48½ and 41½. The United States Steel Corporation new 5's sold up to 80½ during the week, and the lowest point touched was 78½ on Tuesday of this week.

**Tennessee Coal, Iron & Railroad Company.**—The quarterly and semiannual reports of the Tennessee Coal, Iron & Railroad Company are extremely favorable, as compared with the corresponding periods of last year. The reports reflect the high prices that prevailed for iron during the last six months. The earnings of the corporation for the six months are equal to about 6.5 per cent. on the common stock. The surplus for the six months which ended June 30 last is given as \$1,494,914, or almost treble the surplus reported in the corresponding period of last year. The surplus for the last quarter was \$860,485, an increase of more than \$500,000 over the corresponding quarter of last year. The net earnings for the quarter show an increase of \$494,130, and for the half year an increase of \$855,342. The report for the six months which ended June 30 is as follows:

	1903.	1902.	Increase.
Net earnings.....	\$2,125,166	\$1,269,824	\$855,342
Other income.....	10,309	5,922	4,387
 Total income.....	 \$2,135,475	 \$1,275,746	 \$859,729
Interest on bonds and dividends.	\$370,252	\$383,603	*\$13,351
Taxes and administration expenses.....	29,851	45,761	*16,180
Other interest.....	.....	3,602	*3,602
 Total charges.....	 \$399,833	 \$432,966	 *\$33,133
Balance.....	\$1,735,642	\$842,780	\$892,862
Depreciation.....	230,796	233,001	*2,205
 Balance.....	 \$1,504,846	 \$609,779	 \$895,067
Preferred dividends.....	9,932	13,243	*3,311
 Surplus.....	 \$1,494,914	 \$596,536	 \$898,378

\* Decrease.

The Carpenter Steel Company of Reading, Pa., recently offered at par 14,621 shares of cumulative 6 per cent. preferred stock to pay off the floating debt and for additional working capital. The total authorized issue is \$3,500,000, of which \$1,500,000 is preferred stock.

**Dividends.**—National Steel & Wire Corporation have declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable August 5.

American Seeding Machine Company have declared the first quarterly dividend of 1½ per cent. on the preferred stock, payable August 1. Books closed July 15 and will reopen August 5.

Cambria Steel Company have declared the regular semi-annual dividend of 1½ per cent., payable August 15, to stock of record July 31.

United States Cast Iron Pipe & Foundry Company have declared a quarterly dividend of 1 per cent. on the preferred stock, payable September 1. Books close August 11 and reopen September 1.

Tidewater Steel Company have declared an additional dividend of 2 per cent. on the preferred stock, payable July 31. This makes a total of 5 per cent. on the preferred for the year.

## The Iron and Metal Trades.

According to the latest advices it is likely that the differences between the Coal miners in the Birmingham district and the furnace companies will be settled by arbitration, work to be resumed while the matter is pending.

Generally speaking, peace is beginning to reign once more in labor circles, and consumption will not be hampered on that account. The burning question has now become to what extent the decline in securities will check new undertakings and thus adversely affect the demand.

In the Iron trade proper the waiting attitude of buyers is being persisted in, and is having its effect upon prices.

There have been repeated rumors that large consuming interests had begun to buy Foundry Iron for the second half, but investigation has shown them to be without foundation. What business is being done is confined to the covering of requirements for 30 days, which in the case of some melters means pretty large blocks. But the real movement has not yet materialized.

There have been some pretty large sales of Steel Billets during the past two weeks, in some cases at low prices.

The principal Steel works of the country, including the United States Steel Corporation, Jones & Laughlin Steel Company, Wheeling Iron & Steel Company, Cambria Steel Company, Lackawanna Steel Company and the Pennsylvania and Maryland companies, have formed a billet pool, which is to be handled in a manner very similar to the Steel Rail Association. While the base price is \$27 for Billets at mill for Bessemer standard sizes, the usual practice will be to make uniform delivered prices. For Open Hearth Steel an advance of \$1 per ton is established. For Carbons between 0.20 and 0.60 there is an advance of \$1 per ton, while Billets above 0.60 carbon carry an extra of \$2 per ton. Sheet Bar and Tin Plate Bar tonnage are quoted \$1 above Billets and Blooms.

It is generally acknowledged that the revived pool is likely to have a steady effect on the Steel market, yet it must not be forgotten that after all that market is very much restricted when compared with what it was in olden days. Only a small part of the Steel tonnage reaches the open market. Many of the outside finishing mills, large and small, have their own Steel works, which supply a considerable part of their requirements and sometimes furnish a slight surplus. The many important finishing mills have long time sliding scale contracts which are not affected by recent happenings. Still, the welfare of many small works will largely depend upon the course which the associated Steel makers, nearly all sellers of finished products of one kind or another, will pursue. Foreign Steel, which was the main reliance of many of the smaller rolling mills on the seaboard and well into the interior, can only come in under special circumstances, although the new official tidewater prices seem to offer an opportunity.

The outside Bessemer plants meet a Bessemer Pig market which is essentially strong. The outside Basic Open Hearth plants are in a better position as to the Basic Pig market, where more ample supplies are available, notably from the South.

The associated Rail mills have thus far officially reported sales for 1904 aggregating 450,000 tons, which is not quite up to the figures which detailed reports of transactions would lead one to expect.

### A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

July 22, July 15, June 24, July 23, 1903. 1903. 1903. 1902.

PIG IRON:	Foundry Pig No. 2, Standard, Philadelphia	\$17.75	\$17.75	\$18.75	\$22.50
Foundry Pig No. 2, Southern, Cincinnati	15.75	16.25	17.25	20.75	
Foundry Pig No. 2, Local, Chicago	17.25	18.00	19.00	21.50	
Bessemer Pig, Pittsburgh	18.75	18.75	19.35	21.75	
Gray Forge, Pittsburgh	17.50	18.25	18.50	21.00	
Lake Superior Charcoal, Chicago	21.50	22.00	24.00	25.00	

### BILLETS, RAILS, &c.

Steel Billets, Pittsburgh	27.00	27.00	28.50	32.00
Steel Billets, Philadelphia	28.25	29.00	30.00	29.50
Steel Billets, Chicago	28.00	29.50	29.50	31.00
Wire Rods, Pittsburgh	35.50	35.50	36.00	36.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago	17.00	17.00	17.00	18.50
O. Steel Rails, Philadelphia	18.75	19.25	21.00	21.25
O. Iron Rails, Chicago	20.00	20.00	20.00	24.50
O. Iron Rails, Philadelphia	21.50	22.00	23.00	24.50
O. Car Wheels, Chicago	21.50	21.50	21.50	21.00
O. Car Wheels, Philadelphia	21.50	20.00	21.50	20.50
Heavy Steel Scrap, Pittsburgh	19.50	20.00	20.00	21.00
Heavy Steel Scrap, Chicago	16.50	16.50	16.50	19.00

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.65	1.65	1.75	1.95
Common Iron Bars, Chicago	1.65	1.65	1.70	1.80
Common Iron Bars, Pittsburgh	1.70	1.65	1.75	1.80
Steel Bars, Tidewater	1.70	1.65	1.75	2.00
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater	1.78	1.78	1.78	2.00
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.75
Beams, Tidewater	1.73 1/2	1.73 1/2	1.73 1/2	2.25
Beams, Pittsburgh	1.60	1.60	1.60	2.00
Angles, Tidewater	1.73 1/2	1.73 1/2	1.73 1/2	2.25
Angles, Pittsburgh	1.60	1.60	1.60	2.00
Skelp, Grooved Iron, Pittsburgh	1.85	1.85	1.90	2.12 1/2
Skelp, Sheared Iron, Pittsburgh	1.90	1.95	2.00	2.15
Sheets, No. 27, Pittsburgh	2.65	2.65	2.65	2.90
Barb Wire, f.o.b. Pittsburgh	2.60	2.60	2.60	2.90
Wire Nails, f.o.b. Pittsburgh	2.00	2.00	2.00	2.05
Cut Nails, f.o.b. Pittsburgh	2.15	2.15	2.15	2.05

### METALS:

Copper, New York	13.50	13.67 1/2	14.50	11.87 1/2
Spelter, St. Louis	5.50	5.45	5.55	5.10
Lead, New York	4.12 1/2	4.12 1/2	4.12 1/2	4.10
Lead, St. Louis	4.12 1/2	4.02 1/2	3.95	3.97 1/2
Tin, New York	27.25	26.90	28.12 1/2	28.25
Antimony, Hallett, New York	6.50	6.50	6.75	8.25
Nickel, New York	40.00	40.00	40.00	50.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.99	3.99	3.99	4.10

## Chicago.

FISHER BUILDING, July 22, 1903.—(By Telegraph.)

While the tonnage of Iron and Steel being placed is relatively small, interest in the market could scarcely be keener than at present. Pig Iron is especially being watched closely and even solicitously, the impression being that prices are close to the turning point. Up to last Saturday, however, the market was very weak, and the little trading was at lower prices, but on Monday the independent furnaces, which had been selling quite freely, withdrew temporarily until the effect of the strike of the miners in Alabama could be more clearly decided. The Steel markets, upon the whole, have been quiet, the general disposition being to buy only for nearby requirements, in marked contrast to the sentiment prevalent a year ago. The softest spots in the market have been Sheets, and independent mills, too, are said to have made lower prices on Hoops and Bands. There has been some little increase in the tonnage of Bars placed, but this is without significance. Billets have been irregular, with freer offerings and a better demand at lower prices. There has continued to be a good demand for railroad material, especially for Rails and bridges, with some fair contracts placed, and still larger ones pending. Old Material has sympathized with Pig Iron, and lower prices have been accepted except for Cast Scrap, which is scarce and advancing. Coke has continued easy, but there is some disturbing talk of a renewal of the difficulty in obtaining ample rolling stock for quick movement.

**Pig Iron.**—The Pig Iron market is in an interesting state. It is evident that both large and small buyers are watching the market closely, prepared to place orders as soon as it is evident that the market has begun to turn. All melt-

ers are seeking for the bottom prices, and to secure this advantage have been running stocks to the minimum. Indeed, not a few have been compelled to cover requirements for 30 days or more, and are still waiting to place contracts to cover their needs for the last half of the year. The negotiations of the largest buyers in the market, notably the International Harvester Company and the United States Cast Iron Pipe Company, are being watched very closely by other melters of Iron, and the placing of this tonnage will be the signal of liberal buying by smaller customers. During the latter part of last week a rumor was circulated that the large implement manufacturers had covered a portion of their requirements and caused considerable interest, if not uneasiness, among both buyers and sellers. This report was not verified, however, the impression being that if the order was placed at all it was only tentative. It is significant that at the last meeting of the members of the Southern Furnace Association it was agreed to meet again in two weeks to consider some minor propositions, and while it has not been given out that prices will again be considered there is nothing to prevent such action. When it is taken into consideration, too, that some agents have rather encouraged a belief in a \$12 base, the present dull and weak market is the natural result. There were rumors during the week that association furnaces were adhering closely to the established official price, but in such reports the wish was probably father to the thought. The only life that has been in the market during the week has resulted from the action of one or two independent furnaces who were willing to take a certain specified tonnage for the last half of the year delivery at prices ranging between \$12.50 and \$13 for No. 2 Foundry, Birmingham basis, resulting in sales of about 6000 tons in all, in lots of 100 to 700 tons each for quick shipment, and about 2500 tons on the same basis for delivery during the last half of the year. Northern Iron has been especially slow and weaker, and local Iron, which has been held especially high because of the limited tonnage for sale for several months to come, has also been reduced \$1 per ton. The stock of Charcoal Iron in the North is said to have decreased quite largely recently. Bessemer Iron has been more freely offered both in this section and delivered from the Valleys at much lower prices, with considerable inquiry but little trading of moment. There has continued to be a fair demand for Silvery Iron, which has been selling in small quantities for quick shipments. Among the sales may be mentioned 400 tons of No. 2 Southern Coke Foundry at \$13, Birmingham; 3000 tons do. at \$12.50, Birmingham, and 500 tons of No. 3 Foundry at \$12, Birmingham, for delivery during the last half of the year; 100, 300, 400 and 700 tons of No. 2 Foundry at between \$12.50 and \$13, Birmingham, for shipment during the next 30 to 60 days; 300 tons of Kentucky Silvery, 8 to 10 per cent. silicon, at \$21 at furnace for quick shipment. Single carloads of Foundry grades have sold at "official" prices. There have also been moderate sales of Soft Foundry grades and Forge Iron on the basis of quotations for early delivery. Three hundred tons of Malleable Bessemer sold at about \$18.85, Chicago, for shipment from July to November. The following are the prices current, f.o.b. cars, Chicago, the inside prices for the last half of the year and the outside for quick shipment:

Lake Superior Charcoal	.....	\$21.50 to \$22.50
Local Coke Foundry, No. 1	.....	17.75 to 18.25
Local Coke Foundry, No. 2	.....	17.25 to 17.75
Local Coke Foundry, No. 3	.....	16.75 to 17.25
Local Scotch, No. 1	.....	19.00 to 19.50
Ohio Strong Softeners, No. 1	.....	19.00 to 19.50
Ohio Strong Softeners, No. 2	.....	18.50 to 19.00
Southern Silvery, according to Silicon	.....	19.10 to 20.00
Southern Coke, No. 1	.....	17.35 to 17.85
Southern Coke, No. 2	.....	16.85 to 17.35
Southern Coke, No. 3	.....	16.35 to 16.85
Southern Coke, No. 1 Soft	.....	17.35 to 17.85
Southern Coke, No. 2 Soft	.....	16.35 to 16.85
Foundry Forge	.....	15.85 to 16.35
Southern Gray Forge	.....	15.35 to 15.85
Southern Mottled	.....	14.85 to 15.35
Southern Charcoal Softeners, according to Silicon	.....	20.85 to 21.85
Alabama and Georgia Car Wheel	.....	25.85 to 27.85
Malleable Bessemer	.....	18.30 to 18.85
Standard Bessemer	.....	18.50 to 19.00
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon	.....	21.30 to 23.50

**Bars.**—Contracts for about 2500 tons of Soft Steel Bars have been placed for delivery extending over into 1904 and some little improvement is noted in the demand from agricultural implement manufacturers, but the tonnage placed is still small, although specifications are being received quite liberally on previous contracts. There has been a fair demand for Bar Iron, a number of contracts ranging from 100 to 500 tons having been placed for delivery during the summer and fall months. Hoops and Bands are reported to have been sold at concessions, but Bars are well sustained. The following are the prices current, f.o.b. cars Chicago, mill shipment: Bar Iron, 1.65c. to 1.70c.; Soft Steel Bars, 1.76½c. to 1.86½c.; Hoops, 2.06½c. to 2.16½c.; Bessemer Bands, 1.76½c. to 1.86½c.; Angles, under 3 inches, 1.86½c. to 1.91½c., base. There has been a moderate merchant trade and the market has remained steady at the following prices: Bar Iron, 2c. to 2.15c.; Soft Steel Bars, 2c. rates; Angles,

under 3 inches, 2.10c. rates, and Hoops, 2.40c., base, from store.

**Structural Material.**—The feature of the week has been the increased number of specifications received on old contracts, but new business has given but little evidence of improvement except in the railroad department, there being a better demand for bridge work, with several contracts aggregating several thousand tons having been placed within the past ten days. Among the sales were 800 tons for a bridge for the Chicago & Great Western, and a contract for about 1000 tons for the Missouri Pacific is pending. The market has remained steady in tone, without essential change in prices, which are as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. The demand for shipments from local stocks has been only moderate and readily met at previous prices: Beams and Channels, 2½c. to 2½c.; Angles, 2.25c. to 2.50c.; Tees, 2.30c. to 2.55c., at local yards.

**Plates.**—There has been little new business offering, the demand from boiler manufacturers being especially light, but specifications on old contracts have been considerable and the mills are still well supplied with orders. The market has remained firm in tone, the following being the prices current, f.o.b. cars Chicago, mill shipment: Tank Steel, ¼-inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.15c.; Marine, 1.95c. to 2.10c. There has been a moderate demand for shipment from local warehouse and the market has remained steady, as follows: Steel, ¼-inch and heavier, 2.15c. to 2.20c.; Tank Steel, 3-16 inch, 2.25c. to 2.30c.; No. 8, 2.30c. to 2.40c.; Flange Steel, 2.40c. to 2.50c., all f.o.b. warehouse, Chicago.

**Sheets.**—The market has continued slow and easy for both Black and Galvanized Sheets, some cutting of prices being reported indulged in. The following are the prices current, f.o.b. Chicago, for Black Sheets, mill shipments: No. 10, 2.06½c. to 2.16½c.; No. 12, 2.16½c. to 2.26½c.; No. 14, 2.26½c. to 2.36½c.; No. 16, 2.36½c. to 2.46½c.; Nos. 18 and 20, 2.50½c. to 2.60½c.; Nos. 22 and 24, 2.60½c. to 2.70½c.; No. 26, 2.70½c. to 2.80½c.; No. 27, 2.80½c. to 2.90½c.; No. 28, 2.90½c. to 3.00½c. The moderate orders for shipment from local stocks are filled at from 10c. to 15c. over mill prices. Galvanized Sheets have been quiet and easy at 75, 10 and 5 to 75, 10 and 7½ discount, mill shipments. Small lots from local stocks are sold on the basis of 75 and 5 to 75, 5 and 2½ discount.

**Cast Iron Pipe.**—The market has continued slow and easy, as buyers anticipate a decline and are generally holding off, and it is probable that a large order could be filled at \$1 per ton under the following quotations. Among the larger sales of the week have been 1200 tons of medium sizes for delivery at Sacramento, Cal.; 800 tons of 18's and 4000 feet of 12's to the city of Chicago at \$31, delivered. The following are the prices current for small lots, f.o.b. cars, Chicago: 4-inch, \$33; 6-inch, \$32; 8-inch, \$31.50, and larger, \$31 for Water, and \$1 per ton higher for Gas Pipe.

**Billets.**—The market has been somewhat irregular, under freer offerings from independent Steel works, who have recently entered the market. Some very low prices are said to have been current in the East two weeks ago and have been reflected in this market, but at the close a little firmer feeling has developed and a better inquiry, there being several large buyers in the market for from 5000 to 10,000 tons of Bessemer Billets on the basis of about \$27, Pittsburgh, but small orders have been filled at considerably higher prices, among the sales being several lots of different sizes, aggregating about 2000 tons and averaging \$28.50, Pittsburgh, mill shipment, for Open Hearth and Bessemer together. Bessemer Re-rolling Billets are nominally quotable at \$29 and Open Hearth at \$29.50 to \$30, Chicago, in round lots. Single cars of Open Hearth Billets continue to sell at \$32 to \$38, according to analysis, buyer and time of delivery, with premiums of \$1 a ton asked and obtained for less than carload lots.

**Rods.**—There has been a better demand for Wire Rods, with sales of 500 tons of Open Hearth at \$36.25 and 300 tons of Special Chain Rods at \$38, Pittsburgh.

**Merchant Pipe.**—An unusually active demand has been experienced by both the manufacturing and jobbing trade during the last week, and the market has continued firm in tone without change in the schedule of discounts, which are as follows for carload lots, Chicago, base, random lengths, mill shipment:

	Guaranteed Wrought			
	Steel Pipe.	Iron.	Black.	Galvd.
	Black.	Galvd.	Black.	Galvd.
½ to ¾ inch	66.35	56.35	63.35	53.35
¾ inch	68.35	58.35	65.35	55.35
7 to 8 inches	73.35	63.35	70.35	60.35
7 to 12 inches	87.35	57.35	64.35	54.35
Less than carloads, 12½ per cent. advance.				

**Boiler Tubes.**—New orders of considerable moment have been received during the week, which, coming upon an already well filled order book, preserved the strong tone pre-

viously noted, without change in prices, the following being the schedule of discounts current:

	Steel.	Iron.
1 to 1½ inches.....	40	35
1½ to 2½ inches.....	55.85	35.85
2½ to 5 inches.....	60.85	45.85
6 inches and larger.....	55.85	35.85
Less than carloads, 12½ per cent. advance.		

Jobbers report a fair number of orders and the market has continued firm in tone, without change in prices, the following schedule of discounts being for shipment from local stocks:

	Steel.	Iron.
1 to 1½ inches.....	40	35
1½ to 2½ inches.....	50	32½
2½ to 5 inches.....	57½	42½
6 inches and larger.....	50	..

**Merchant Steel.**—There has been some little improvement in the demand for Machinery, Agricultural and Spring Steel, with several 100-ton lots closed for delivery during the current season. The demand for Shafting has continued fair, and there has been also a better demand for Tool Steel, without essential change in the prices current, the following being the quotations for mill shipment, Chicago: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.66½c. to 2.76½c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6c. to 8c. for mill shipment; Specials, 12c. upward. Cold Rolled Shafting in carload lots sells at 47 and in less than carload lots at 42 discount from list.

**Rails and Track Supplies.**—Sales of Standard Rails have aggregated about 30,000 tons during the week for shipment mainly during 1904, and contracts aggregating about 75,000 tons are still pending. The demand for Light Rails has increased rather than otherwise, with sales of 2500 tons for early shipment. A strong tone has continued to prevail, prices being unchanged at \$28 for standard and \$27 for second quality, mill shipment. Light Rails are selling at \$34 to \$38, according to weight. Track Supplies have continued in good demand and steady. There has also been an increased demand for Frogs, Switches and other railway specialities. The tone of the market is firm without change in prices, which are as follows for mill shipment, Chicago: Splice or Angle Bars, 2c. to 2.10c.; Spikes, 2.10c. to 2.15c.; Track Bolts, 3½ to 3¾ inches and larger, with Square Nuts, 2.85c. to 2.90c.; with Hexagon Nuts, 3c. to 3.10c. From store, 10c. to 15c. over mill prices are asked and obtained.

**Old Material.**—With the exception of Heavy Cast Scrap, the offerings have been free, especially from railroads, one sale of 400 tons of No. 1 Railroad Wrought being reported at \$14.25; and with only a moderate demand from the mills, who are still disposed to hold off because of the weak market for Pig Iron, the market for Scrap continues to sag and lower prices have been accepted for Iron Fish Plates, Car Axles, Railroad Wrought and Turnings, while heavy and light Cast Scrap has been scarce and advanced about 50c. per ton. The following are the prices current per gross ton, f.o.b. cars, Chicago:

Old Iron Rails.....	\$20.00 to \$20.50
Old Steel Rails, mixed lengths.....	17.00 to 17.50
Old Steel Rails, long lengths.....	19.00 to 19.50
Heavy Relaying Rails.....	29.00 to 31.00
Old Car Wheels.....	21.50 to 22.00
Heavy Melting Steel Scrap.....	16.50 to 17.00
Mixed Steel.....	14.50 to 15.00

The following quotations are per net ton:

Iron Fish Plates.....	\$15.75 to \$16.50
Iron Car Axles.....	20.50 to 21.00
Steel Car Axles.....	19.00 to 20.00
No. 1 Railroad Wrought.....	14.25 to 14.75
No. 2 Railroad Wrought.....	13.75 to 14.00
Shafting.....	17.00 to 18.00
No. 1 Dealers' Forge.....	13.00 to 14.00
No. 1 Bushelling and Wrought Pipe.....	12.00 to 12.50
Iron Axle Turnings.....	11.00 to 11.50
Soft Steel Axle Turnings.....	11.00 to 11.50
Machine Shop Turnings.....	11.00 to 11.50
Cast Borings.....	7.00 to 7.50
Mixed Borings, &c. ....	8.00 to 9.00
No. 1 Boilers, cut.....	.. to 13.00
Heavy Cast Scrap.....	14.50 to 15.00
Stove Plate and Light Cast Scrap.....	10.00 to 10.50
Railroad Malleable.....	15.00 to 15.50
Agricultural Malleable.....	.. to 14.00

**Metals.**—Copper has developed further weakness, and prices have declined, with some little increase in the demand at lower prices. Sales of Casting Copper have been made at 13½c., while Lake has been held at 13½c. to 13¾c., Chicago, in carload lots. Spelter has continued quiet but easier in tone at 5½c. in carload lots for July and August shipment. Sheet Zinc has been steady with a moderate demand at 6¾c., spot. Pig Lead has been moderately active and steady, prices at Chicago being nominally unchanged at 4.05c. in 50-ton lots and 4.07½c. in carload lots. Old Metals have been heavy and weak in sympathy with new material, and lower prices have been accepted for Copper and Brass, while Lead Pipe has been in better demand and stronger. Prices are as follows: Heavy Cut Copper sells at 11½c., Red Brass at 10¾c., Copper Bottoms at 10½c., Lead Pipe at 3.90c. and Zinc at 4.65c., spot.

**Coke.**—The only new feature of interest in the Coke situation is the report of difficulty in obtaining cars for quick shipment at the ovens. There is no scarcity of Coke of any kind, but shipments which a few weeks ago were made in from two to three days now require from one to two weeks because of the difficulty of obtaining cars, as furnaces show a disposition to sell more freely for the next 60 days than for the full half of the year. There have been some moderate transactions, however, for delivery during the next six months on the basis of quotations. Furnace Coke is selling at \$2 to \$2.50, and Standard Foundry Coke at \$3 to \$3.50 at the ovens, while sales of spot supplies are made at \$4.65 to \$5.65 on track, the inside price being for Furnace and the outside for Standard Foundry Coke.

It is announced that the Coke selling agency of the Norfolk Coal & Iron Company, which operates 1400 Coke ovens in the Pocahontas coal fields, has been secured by Rogers, Brown & Co., the contract to become effective October 1, this year.

## Philadelphia.

FORREST BUILDING, July 21, 1903.

It cannot be claimed that the Iron and Steel situation is better than it was a week ago. In some respects it is less favorable; in others it begins to look better. Prices in almost all lines are easier at last week's figures, and in no case can they be called firmer. Against this, however, there is a growing impression that there will be a considerable demand in the near future. So little Iron has been bought during the past three or four months, that contracts must be pretty well run out, so that there ought to be a good many renewals during the next few weeks. The main difficulty is to arrive at a satisfactory basis of prices. A great deal of Pig Iron would be taken if buyers were sure that prices would not go below whatever figures might be agreed upon for new business. They would not necessarily buy for a rise, but would cover their usual requirements, providing they were reasonably sure that they would not have to meet a further decline. Such buying would in itself be a great help to the market, and apart from the objection named, it is difficult to see why heavy purchases should not be made almost immediately. The question naturally arises, what prices would be regarded as satisfactory? It might not be difficult to fix a rate that would be safe for a couple of months, and under certain contingencies it might be safe for six months; but conditions in the future are not sufficiently clear to say what quotations may be in force six months hence. The first consideration is in regard to the extent of the demand; the next is in regard to production. The former will, in a measure, depend upon the character and the value of the crops, and also upon the financial situation. The latter (i. e., production) will depend very largely upon the prices which Iron will be likely to bring in the open market. This, it will be seen, opens the way for a very extended discussion, but, apart from that, a few of the most salient features appear to be as follows: a. Crop prospects are, perhaps, not unusually brilliant, but they are good. b. The money situation is not satisfactory, but the probability is that by judicious action in making early provision to meet crop moving requirements, much of the difficulty and all the danger will be removed. There is nothing, therefore, to cause serious apprehension in regard to a decrease in the demand for Iron, or a further decline in prices, except such as may arise from excessive production, which at present is undoubtedly the largest on record. In other words, there is no evidence of any serious curtailment in consumption, but there can be no question in regard to the great increase in production. The problem for the immediate future, therefore, may be summed up in a single sentence—viz.: "Adjustments to meet changed conditions."

**Pig Iron.**—The market is too uncertain to permit of exact quotations being given. Sales are made at all sorts of prices, from \$18.75 for No. 2 X Foundry down to \$17.75, and on lots for deliveries covering the entire year the inside figure could be shaded, but how much it could be shaded is something that can only be ascertained by making a bid for it. The demand during the past few days has been of the same general character as during the two or three preceding weeks, and as yet there are no indications that buyers are likely to change their attitude. Of course there must be a change soon, but it will be difficult to establish firm quotations until either buyers or sellers are compelled to give way. Sellers appear to have done their share, but it is useless to keep on lowering prices unless buyers are ready to do business. The prices fixed by the Southern Furnace Association appear to be of no effect, and the attempt to meet large buyers on the basis of about \$17.75, delivered, for No. 2 X locally is equally unavailing, so that, as Mr. Tweed once said in a moment of perplexity, "What are you going to do about it?" It is unreasonable to expect all the talking to be on the selling side, and it is believed to be quite in order for buyers to formulate their propositions. But so far they seldom talk more than a carload or two, with 200 to 300 or 500 ton lots in between times; hence the diffi-

culty in knowing where we are at. Gray Forge is considerably lower than it was a week ago, and at \$16.50 it is said that a good grade of No. 3 was declined a day or two ago. Prices, therefore, are for the present a matter of arrangement between the buyer and seller and are to a large extent contingent upon the conditions appertaining to each transaction. The range, however, for delivery in Philadelphia or equivalent points would be about as follows:

No. 2 X Foundry.....	\$17.75 to \$18.50
No. 2 Plain.....	17.00 to 17.50
Gray Forge, Standard.....	17.00 to 18.00
Ordinary Gray Forge.....	16.50 to 16.75
Basic.....	17.25 to 17.50

**Steel.**—There is more business doing and more inquiry, but prices are inclined to droop. Several lots of Basic were taken from local mills at about \$29, and a considerable quantity additional would be taken at slight concessions, but makers consider that under present conditions prices are low enough, say \$29 to \$29.50, delivered, for ordinary qualities.

**Plates.**—The demand is not as brisk as could be desired, but mills have enough business to keep them fully employed temporarily. Back orders are diminishing, however, and there is some anxiety to secure replenishments, which it is hoped will be forthcoming in the near future. Prices unchanged as last quoted—viz., for deliveries in buyers' yards: Carload lots,  $\frac{1}{4}$ -inch and thicker, 1.75c. to 1.80c.; Universals, 1.75c.; Flange, 1.90c.; Marine, 2c. to 2.05c.; Fire Box, 2.10c. to 2.20c.; smaller lots 1-10 to 2-10 more money.

**Structural Material.**—With a general resumption of work in the building trades it is expected that there will be more activity at the mills, but it will be chiefly on orders on which deliveries were suspended and not on new business. Consumption is expected to be large, however, and to that extent the outlook is distinctly better. Prices unchanged—viz.: Beams, Angles or Channels, ordinary sizes, 1.73 $\frac{1}{2}$ c. to 1.80c. for carload lots, with the usual addition for smaller quantities.

**Bars.**—There is more doing in Bars, but the market is very irregular. In most cases 1.70c., at mill, is quoted for good Refined Iron in carload lots, but buyers say that they are advised that bids at less money would be accepted and freight paid on good sized lots. Still lower prices have been named, but 1.65c. to 1.70c., delivered, are safe average figures to quote, as there would be no trouble in placing orders at these rates on desirable business. Steel Bars, 1.70c. to 1.75c., and not specially strong even at these figures.

**Sheets.**—This is about the only department in which it can be said that there is a good demand and at unchanged prices. Mills are running full and report a very active inquiry, with free sales at the figures recently ruling.

**Old Material.**—There is a somewhat better feeling, and although prices are low there is more disposition to buy—at a price. Until recently low prices were no inducement, but to-day's business could be had by lowering prices a little. Prices are, therefore, more or less irregular, and in absence of actual sales are nominally as follows:

Old Steel Rails.....	\$18.75 to \$19.25
Heavy Steel Scrap.....	18.50 to 19.00
Low Phosphorus Scrap.....	26.00 to 27.00
Old Steel Axles.....	22.00 to 23.00
Old Iron Rails.....	21.50 to 22.00
Old Iron Axles.....	24.00 to 25.00
Old Car Wheels.....	21.50 to 22.00
Choice Scrap, R. R. No. 1 Wrought.....	18.50 to 19.00
Country Scrap.....	17.00 to 17.50
Machinery Scrap.....	17.00 to 18.00
No. 2 Light Scrap.....	17.00 to 18.00
No. 2 Light (Ordinary).....	12.00 to 12.50
Wrought Turnings.....	14.00 to 14.50
Wrought Turnings, Choice Heavy.....	14.50 to 15.00
Cast Borings.....	9.00 to 9.50
Stove Plate.....	12.50 to 13.00

## Cincinnati.

FIFTH AND MAIN STS., July 22, 1903.—(By Telegraph.)

Nothing seems to have occurred in the Pig Iron market to disturb the apathy of the buying side of the situation. Falling prices seem only to increase the general dullness. Selling is in the main confined to retail lots, and an occasional 500 or 1000 ton deal brings out the whole selling contingent in competition. It is an exceedingly hard proposition to define values. The association furnaces are believed to be holding to their schedule, but somebody is taking the important trades at figures well below that same schedule. A recent competitive sale made in Chicago is reported on the basis of \$12.50, Birmingham, for No. 2 Foundry. Freight rates from the Hanging Rock district, \$1.15, and from Birmingham to Ohio River points, \$3.25. We quote, f.o.b. Cincinnati, for delivery throughout the year, as follows:

Southern Coke, No. 1.....	\$16.25 to \$17.25
Southern Coke, No. 2.....	15.75 to 16.75
Southern Coke, No. 3.....	15.25 to 16.25
Southern Coke, No. 4.....	14.75 to 15.75
Southern Coke, No. 1 Soft.....	16.25 to 17.25
Southern Coke, No. 2 Soft.....	15.75 to 16.75
Southern Coke, Gray Forge.....	14.75 to 15.50
Southern Coke, Mottled.....	14.50 to 15.50
Ohio Silver, No. 1.....	24.15 to 24.65
Lake Superior Coke, No. 1.....	18.15 to 18.65
Lake Superior Coke, No. 2.....	17.65 to 18.15
Lake Superior Coke, No. 3.....	17.15 to 17.65

## Car Wheel and Malleable Irons.

Standard Southern Car Wheel..... \$26.25 to \$26.50  
Lake Superior Car Wheel and Malleable 23.50 to 24.00

**Old Material.**—We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, \$15.25 per net ton; Iron Axles, \$21.50 to \$22 per net ton; Cast Scrap, \$14 per gross ton; Car Wheels, \$20, gross; Iron Rails, \$22, gross; Long Steel Rails, \$18, gross; Low Phosphorus Steel, \$23, gross; Heavy Melting Steel, \$16, gross.

## Birmingham.

BIRMINGHAM, ALA., July 20, 1903.

Since my last letter there has been but little change in the condition of the Iron market. Different interests report differently as to the volume of trade. Some say it has increased to a moderate extent. Others say there is no change to record, while some assert that they can make no sales at official figures. One thing is evident, and that is an absence of activity in the trade. The associated furnaces seem to be caring only for their regular trade, and cherish the belief that general buying will soon begin and the market become broader, and, if it don't harden, will remain firm. A less influential element representing smaller interests incline to the opinion that the market must reach a point of activity in buying before it becomes healthy. Advantage has been taken of the lull that followed the miners' strike to do the repairing necessary to keep up efficiency of the plants both in Coal and Iron. But there has been more or less shifting done to keep things going. After an enforced idleness since the 1st inst. on the part of the miners, they met in convention again on Saturday to discuss the situation and to reconsider the respective propositions. As before stated, the miners insisted upon a 5-cent advance, both minimum and maximum, an eight-hour day and a semimonthly pay day. These items were rejected by the operators, who proposed simply an increase of 2 $\frac{1}{2}$  cents for mining coal; and this was rejected by the miners. There was nothing then to do but await events, and negotiations were suspended until at the miners' reconvened convention on Saturday they proposed arbitration on their three original propositions, each side to select their arbitrators, and those selected to agree on the fifth one. This made it necessary, then, for the operators to withdraw their proposition of 2 $\frac{1}{2}$  cents increase and to consider that proposed by the miners. It was favorably considered, with the proviso added that the selection of the fifth arbitrator should be limited to United States judges having jurisdiction in this State. But this was strongly opposed on the ground that they had shown themselves to be inimical to union labor. So there is a chance for another split on this new rock, as the convention adjourned without definite action. They meet again to-day to resume discussion, when it is hoped an agreement will be reached. It can be said of the miners that during this interregnum they have conducted themselves with every regard to their duties as good citizens. There was some excitement the past week, owing to the complications developed in the affairs of the Southern Car & Foundry Company. Several creditors levied attachments on their properties, and a receiver was asked for here and an effort made to throw it into bankruptcy.

The report of the Southern Car Association for June shows that they handled 60,780 cars, as against 48,725 in June, 1902. For the six months this year they handled 369,733, as against 303,361 last year, an increase that is very gratifying, as it shows a constantly growing business.

The Birmingham Railway & Power Company have begun the erection of an addition to their power plant, the building to be 100 x 150 feet and of brick.

The Blakslee Company increased their capital from \$50,000 to \$200,000, and the Berks Coal & Mining Company filed articles of incorporation, being capitalized at \$100,000. Several other corporations filed articles, but they were of no significance.

The various shops are working full time, the Birmingham Boiler Works being engaged on two stoves for the furnaces at Rusk, Texas.

(By Telegraph.)

BIRMINGHAM, ALA., July 21, 1903.—The operators and miners in convention assembled agreed this afternoon to submit their differences to arbitration, each side naming two arbitrators and the four to select the fifth one. The matter was referred to the various camps for ratification, and pending this adjournment was taken until Thursday. It is understood that all contentions from either side will be submitted to the Court of Arbitration, whose decision will be accepted as final. Work will be resumed after the selection of the fifth arbitrator, and the wages, etc., will be paid as per decisions of the Court that may be rendered. This agreement is accepted as a settlement of the question, and brings about the resumption of work and fixes a scale of wages for another year, binding on both sides. An agreement now seems assured. Public sentiment favors a settlement.

## Cleveland.

CLEVELAND, OHIO, July 21, 1903.

**Iron Ore.**—The consumers of Iron Ore are beginning to look around a little, and it is believed that some sales will be made soon. Some of the consumers had expected a lessening of their needs for that material, because the furnaces were expected to let down in their operations, but this has not occurred. Purchases need hardly be expected, however, until there is a further revival in the demand for Pig Iron. Prices have not changed from a basis of \$4.50 for Bessemer old range and \$4 for Bessemer Mesaba. The lake movement is still heavy. The latter part of last week and the first of this showed an exceptional movement from the head of the lakes of 35 cargoes daily, but this is out of the ordinary, the general movement being 20 cargoes daily from the head of Lake Superior, or about the average of last year. The supply of boats has been about equal to the demand. The delays at the lower lake docks are more serious than ever before, ranging between three and three and a half days to each vessel on an average. The shippers have been talking of lowering the rates, but the owners have construed this talk to mean that the shippers are trying to ward off an advance which the vessel owners have prepared to demand. The wild carrying charges hold at 80c. from Duluth, 70c. from Marquette and 60c. from Escanaba.

**Pig Iron.**—The demand for Foundry Iron is very light. The little better outlook noted last week has disappeared. The selling is confined entirely to small lots of one or two carloads, with absolutely nothing better immediately in prospect. It is evident that the consumers are waiting for still lower figures. No. 2 Foundry is now being quoted at \$18, in the Valley, as a maximum, with some apprehension that there will be a still lower price before anything is done. Nos. 3 and 4 Foundry are also quoted down, with \$16, in the Valleys, about the maximum, and some talk of going lower. The demand for Malleable has been only fair, with the price holding about \$18.50, in the Valley, and some evidence that this grade is leading the market at the present time. Gray Forge has been selling fairly well, with the quotations holding at \$18, Valley furnace. The Southern furnaces are still making competitive prices. It is known that some offers have been made of material in this territory at \$13, Birmingham. The association furnaces have not yet met this price, but from previous experience it seems imperative that they shall do so. The demand for this Southern Iron in this territory is very light, however. Southern Ohio furnaces producing No. 2 Foundry have met the price quoted by the Valley furnaces. There has been a very light inquiry for Bessemer and Basic Iron. Prices are undisturbed, although nominal, being \$18.50 to \$19.35, in the Valley, for Bessemer, and \$18.75, Valley furnace, for Basic. The Coke supply of the furnaces in the Valleys has been secured with difficulty. The furnaces have, however, continued to run without interruption and the production has been heavy. One of the best features is that the stocks at the furnace yards have not increased perceptibly during the past week or so. In fact, the movement away from the furnaces has been about equal to the production. This is the most hopeful sign that presents itself in the Iron and Steel trade of this territory.

**Finished Iron and Steel.**—For the first time since the easier feeling in this territory, the larger Steel interests here are admitting that the market is extremely dull. Cleveland has heretofore been the most buoyant of the entire market. The lethargic conditions which have extended over the country have at last reached this little corner of the market, and things are dull. The one phase of the situation which still remains strong is the Sheet trade. The demand for this class of material is still heavy and the mills report that they have orders ahead that will keep them busy for weeks. There have been persistent rumors that the smaller mills have been cutting under the association prices. This has perhaps been done to a limited extent to keep the smaller concerns running, but the reductions have not had a depressing effect upon the market, nor has this reduction caused anything like a general break in the prices. The market holds firm at former quotations: Black Sheets out of stock, based on No. 27 at 3.05c.; the same in carload lots; One Pass Cold Rolled, based on No. 27 at 2.75c. at the mill, and Blue Annealed, based on No. 14 at 2.20c. at the mill. Galvanized Sheets, based on No. 27, out of stock, at 4c. The call for Plates has been extremely light, with nothing of any consequence being done. The demand has been light both from the larger and the smaller mills; neither has there been anything in the way of heavy specifications against former contracts. The mills are still running, but on short orders. The small mills have reduced their premiums, the market being represented by a quotation of 1.80c. to 1.85c., Cleveland. The larger mills are making delivery in three or four weeks at 1.60c., Pittsburgh. The call for Structural has been a little better. New business has come in heavily and the specifications against former contracts have been strong. There is but one mill quotation, all producers getting the same price—namely, 1.60c., Pittsburgh. The jobbers report that they are now getting more

business than they have had at any time this year, and say that July is showing up better than any month for a considerable period. The stock price is 2.15c., Cleveland. The Bar Iron price is very uncertain. The production is light. One sale of a considerable amount was made to Cleveland parties during the week at a price which was not named. The understanding is that the quotations range about 1.60c. to 1.70c., Youngstown. Bar Steel holds at 1.60c., Pittsburgh, for Bessemer, and 1.70c. for Open Hearth. The big buyers have not yet covered their needs for any length of time in future, but are buying hand to mouth. The call for Billets has been a little more brisk, with, however, comparatively light selling. The call for Rails is confined to Light Sections for immediate use. The price holds at \$36, Pittsburgh.

**Old Material.**—The general dullness in the Pig and Bar Iron trade finds a reflexive effect in the Scrap trade. The market is extremely dull. While prices are sagging generally, no marked reductions have been made. We continue to quote, all gross tons: Heavy Melting Steel, \$19.50; Old Steel Rails, \$20.50; Old Iron Rails, \$22; Car Wheels, \$20; Railroad Malleable, \$17; Cast Borings, \$8.50. All net tons: No. 1 Busheling, \$16; Wrought Turnings, \$12; Iron Axles, \$24; Cast Scrap, \$15.50; Stove Plate, \$12.

## Pittsburgh.

PARK BUILDING, July 22, 1903.—(By Telegraph.)

**Pig Iron.**—While the Pig Iron market continues exceedingly quiet there is more or less inquiry, and in the last few days a number of small sales of Foundry have been made. Bessemer Iron is still held at \$18, at Valley furnace, or \$18.85, Pittsburgh. Standard brands of No. 2 Northern Iron are held at about \$18 to \$18.50, and Southern brands \$17.25 to \$17.50. Northern brands of Forge Iron are about \$17.50, and Southern brands about \$16, Pittsburgh.

**Steel.**—Under the terms of the Steel agreement, which is now in force, small Bessemer Billets, 3½ inches and smaller, take \$1 advance over 4-in, which makes them \$28, Pittsburgh, Wheeling or in the Valleys. Sheet and Tin Bars, cut to lengths, take \$1.50 advance over the base price of Bessemer Billets, which makes them \$28.50, Pittsburgh, Youngstown or the Valleys. The Steel agreement includes eight of the leading Steel concerns, and it is believed that the fixed prices will be rigidly adhered to.

(By Mail.)

The principal event of the week is the agreement reached by half a dozen of the leading Steel concerns on prices for Billets. The prices agreed to are on the basis of \$27, maker's mill, Pittsburgh, Wheeling or the Valleys, for 4-inch Bessemer Billets up to 0.20 carbon. For carbons 0.21 to 0.60 \$1 per ton extra is charged, and for carbons 0.61 to 1.00 \$2 per ton extra is charged. For Open Hearth Billets up to 0.60 carbon the price is \$28, base, and for over 0.60 carbon \$2 a ton extra is charged. It has been recognized that for some time the price of Steel has been too high, and it was for the purpose of keeping it in line with Pig Iron and Finished Material that the Billet agreement has been renewed. It is believed that the leading Steel mills by having fixed prices for Steel will be able to more easily control the market and prevent violent fluctuations in prices. The fact that the Steel business of the country is practically controlled by the six leading concerns that are in the agreement makes it much easier to handle the Steel market than was the case several years ago when there were from 15 to 20 concerns to be kept in line. If the prices on Steel are adhered to it ought to have a good general effect on the whole market. We understand that Sheet Bars are not included in the agreement, but these will probably take an advance of about \$2 a ton over the price of Bessemer Billets, which would make them \$29, f.o.b. maker's mill, Pittsburgh or Valleys. The general condition of the Iron market is extremely quiet, and buyers are pushing the policy of placing orders with extreme caution. The events of the past week or two in the stock market, particularly in the Steel issues, seem to have had the effect of scaring buyers, and they are either not placing orders at all or else are buying from hand to mouth. Hardly enough Pig Iron is being sold to fix prices. Bessemer Iron is quoted in a general way at \$18 at furnace, but there is practically no buying. Forge and Foundry Iron are very dull, the former being quoted as low as \$16, Pittsburgh, for Southern, while No. 2 for Southern brands is being quoted at \$17 or less.

**Steel Rails.**—Some fair sized orders are being placed, and there is a good deal of inquiry for 1904 delivery. Most of the buying so far has been by Western roads, this tonnage going to the Illinois mill. We quote at \$28, at mill, for Standard Sections in 500-ton lots and over.

**Muck Bar.**—There is practically no buying of Muck Bar, and the market is depressed and lower. We quote best makes of Muck Bar at \$30, delivered, and this could probably be shaded on a firm offer.

**Plates.**—Tonnage in Plates is fairly satisfactory, but leading consumers are not placing large contracts as they did

some time ago. In fact, current demand is running mostly for small lots. We quote: Tank Plate,  $\frac{1}{4}$ -inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches wide, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

**Ferromanganese.**—The market is quiet and in sympathy with the general situation. Prices are a little lower. We quote 80 per cent. Ferro at \$49, delivered. On a firm offer a little better might be done.

**Structural Material.**—The outlook in the Structural trade is fairly satisfactory, but at the same time it is true that a great many large contracts that would have taken an immense tonnage have either been put off until next year or indefinitely. This condition is largely due to the labor troubles, which have been very costly, both for manufacturer and employee. Current orders are mostly for small lots, no large contracts having been placed in this district for some time. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c. to 1.70c.

**Iron and Steel Bars.**—Tonnage in both Iron and Steel Bars is lighter than for some time, and some of the mills are in need of work. The large consumers of Steel Bars are holding back placing contracts, and this is causing some uneasiness. However, it is expected they will come in the market later on, but their requirements will not be as large as last year. Demand for Iron Bars is mostly of a hand to mouth character, and no large contracts are being placed. We quote Iron Bars at 1.70c., Pittsburgh, but it is probable on a firm offer and a nice contract this could be shaded. We quote Steel Bars at 1.60c., Pittsburgh, in carloads and larger lots. For quantities less than 2000 lbs. but not less than 1000 lbs. \$2 a ton additional is charged, and less than 1000 lbs., \$3 additional.

**Sheets.**—In sympathy with the general market, demand for Sheets has quieted down a good deal, and very few, if any, large contracts are being placed. Consumers do not seem willing to take chances on the future and are buying mostly in small lots. The fact that an agreement has been reached among some of the leading Steel mills, fixing the minimum price of Bessemer Billets at \$27, Pittsburgh, would indicate that Bars will be about \$29, although the agreement made does not cover these. At present prices of Sheets, which are, say, 2.70c. for No. 28, there is very little profit to the Sheet mills that have to pay \$29 to \$30 for Sheet Bars. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 2.60c., and No. 28 at 2.70c., in carloads and larger lots. Galvanized Sheets are held at 75, 10 and  $2\frac{1}{2}$  per cent. off in carloads. For a very nice specification and large tonnage some mills might possibly shade this price a little. Jobbers charge the usual advances over above prices for small lots from store.

**Tin Plate.**—Demand for Tin Plate continues active, and the leading mills are entering orders right along on the basis of \$3.90 to \$4 a box for Coke Plates, f.o.b. Pittsburgh. The price of the leading interest remains at \$3.80 per box for Coke Plates for September and later delivery.

**Rods.**—The market is quiet, and we quote Bessemer Rods at \$35.50, f.o.b. Pittsburgh.

**Hoops and Bands.**—Only a fair amount of tonnage is being placed, and the mills could take care of a good deal more business if they had it. We quote: Cotton Ties, 87c. in 10,000-bundle lots or over; 92c. for carloads; Steel Hoops, 1.90c. in 250-ton lots and 2c. for carloads; Bessemer Bands, 1.60c. to 1.70c. for Open Hearth. Extras as per Steel card.

**Skelp.**—There is practically nothing doing in the Skelp market and prices are weak. We quote Grooved Iron and Steel Skelp at 1.85c., but on a firm offer this could probably be shaded. Sheared is held at 1.90c. to 1.95c., f.o.b. Pittsburgh.

**Pipes and Tubes.**—The Pipe market is probably the most active of any of the other Finished Iron and Steel lines, demand being heavy and the mills having a large tonnage booked, especially on the larger sizes of Pipe, on which they are sold up for some months ahead. Additional contracts for Line Pipe, 6-inch and larger, have been placed since our last report. Prices are firm and discounts to consumers in carloads are as follows:

	Merchant Pipe.					
	Steel.		Wrought Iron.		Wrought Iron.	
	Black.	Galv.	Black.	Galv.	Black.	Galv.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
$\frac{1}{4}$ , $\frac{1}{2}$ and $\frac{3}{4}$ inch.....	68	58	65	55		
$\frac{1}{2}$ inch.....	70	60	67	57		
$\frac{3}{4}$ to 6 inches.....	75	65	72	62		
7 to 12 inches.....	69	59	66	56		

#### Merchant Boiler Tubes.

	Steel.	Iron.
1 to $1\frac{1}{4}$ inches.....	42 $\frac{1}{2}$	39
$1\frac{1}{4}$ to $2\frac{1}{2}$ inches.....	55 $\frac{1}{2}$	38
$2\frac{1}{4}$ to 5 inches.....	61	48
6 to 13 inches.....	55 $\frac{1}{2}$	38

We note, however, that some of the mills are naming lower discounts on Iron Pipe than are given above.

**Iron and Steel Scrap.**—Not enough Old Material is being sold to fix prices, and it is hardly worth while to make quotations. Heavy Melting Stock is being offered as low as \$19.50 in gross tons, but there is no buying. No. 1 Wrought Scrap is nominally \$18 in net tons, but this would be materially shaded on a firm offer.

**Coke.**—Some low prices are being made on both Furnace and Foundry Coke, especially in the Eastern market. We understand that Mountain Furnace Coke has been offered as low as \$1.50 a ton at oven. Strictly Connellsville Furnace Coke is held at about \$2.50 a ton at oven, but on contracts for shipment over balance of the year possibly a lower price would be made. Connellsville 72-hour Foundry Coke is being freely offered at \$3 a ton at oven. The supply of Coke is very much in excess of demand, which accounts for the low prices at which it is being offered.

George S. Griscom, Jr., has severed his connection with Hickman, Williams & Co., dealers in Pig Iron, and is located temporarily in Room 406, German National Bank Building, Pittsburgh. Mr. Griscom will continue to handle the Roanoke, Juniata and Princess brands of Southern Pig Iron in the Pittsburgh district.

T. Coleman Ward is now resident agent in the Pittsburgh district for Hickman, Williams & Co., dealers in Pig Iron, succeeding George S. Griscom, Jr., recently resigned.

#### St. Louis.

CHEMICAL BUILDING, July 22, 1903.—(By Telegraph.)

**Pig Iron.**—The recent price changes have not as yet been productive of any marked increase in sales, although the amount of inquiry is said to have increased. Buyers continue to purchase supplies on the day to day plan, and how long this will continue now that a better adjustment of prices has been brought about is the question. Shipments are coming forward in good order. We quote, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry.....	\$17.25 to \$17.75
Southern, No. 2 Foundry.....	16.75 to 17.25
Southern, No. 3 Foundry.....	16.25 to 16.75
Southern, No. 4 Foundry.....	15.75 to 16.25
No. 1 Soft.....	17.25 to 17.75
No. 2 Soft.....	16.75 to 17.25
Gray Forge.....	15.25 to 15.75
Southern Car Wheel.....	26.75 to 27.25
Mailleable Bessemer.....	19.50 to 20.00
Ohio Silvery, 8 per cent. Silicon.....	26.50 to 27.00
Ohio Strong Softeners, No. 1.....	23.00 to 23.50
Ohio Strong Softeners, No. 2.....	23.25 to 23.75

**Bars.**—Conditions rule steady in the Bar market, and the mills are said to have booked a very satisfactory tonnage. Jobbers are doing a fair store trade at uniform prices. We quote from the mills: Iron Bars at 1.70c.

**Iron and Steel Rails and Track Supplies.**—Current trade in this department continues favorable, and the volume of new business booked of late has been very satisfactory. Many of the orders recently placed are for 1904 delivery, while considerable volume is for the last half of the present year. We quote as follows: Splice Bars, 2.05c. to 2.15c.; Bolts, with Hexagon Nuts, 3.05c. to 3.15c.; Bolts, with Square Nuts, 2.90c. to 3c.; Spikes, 2.15c. to 2.25c.

**Small Angles and Channels.**—From the standpoint of the jobber trade is fair. Dependent on quantity, quotation varies from 2.25c. to 2.40c. for this class of material.

**Pig Lead.**—The conditions rule firm in the Lead market, and Missouri brands are readily salable at 4.12 $\frac{1}{2}$ c.

**Spelter.**—The demand for Spelter is steady, and, owing to a light order of supplies, offerings are in small volume. Recent sales on basis of 5.50c.

Schumacher & Boye of Cincinnati, Ohio, are somewhat disappointed at the slowness with which their extension is being erected, but hope within the next 30 days to occupy same. They will remove their offices and warerooms to the new structure when completed, which has been specially designed for this purpose. They have all that they can do, and are making deliveries as promptly as circumstances will permit.

C. S. Koch, assistant manager of the American Radiator Company's plant at Titusville, Pa., has resigned to accept a position with the American Steel Casting Company at Alliance, Ohio.

## The New York Machinery Market.

NEW YORK, July 22, 1903.

General conditions remain unchanged. As is natural at this time of the year, inquiries and orders continue to fall off. One very large proposition has come to the front in the past week, however, and this is at present absorbing the attention of the machine tool trade. It involves the purchase of about \$100,000 worth of machine tools, air compressors, pneumatic tools, &c., for installation in the shops of the Erie Railroad. A large portion of this equipment will be placed in the shops at Meadville, Pa., a portion in the shops at Susquehanna, N. Y., and the balance distributed among other repair shops along the company's lines. The purchases are being made from the New York offices of the Erie Railroad Company, on the eleventh floor of the Havemeyer Building, 26 Cortlandt street. The list comprises a large number of fairly heavy tools, but is made up principally of medium size standard machines. According to the specifications, various tools in the lot will be purchased at different times within the next month, a considerable portion being, however, required promptly, and hence the orders will be placed as soon as possible. Bids are now being presented at the offices of the company. We are advised on good authority that this lot of tools is but the first installation to be made, as a result of a movement to increase the efficiency of all of the car and repair shops along the lines of the Erie system. At the present time extensions in the way of new buildings are being made only at Meadville and Susquehanna.

It is reported that the new shops which are being constructed at Wilmington, Del., by the Pennsylvania Railroad Company are to be considerably increased in size. Under the revised plan it is proposed to enlarge the car erecting shop by extending this structure 40 x 180 feet, and increasing the sizes of the various other buildings by the following extensions: Paint shop, 60 x 180 feet; power house, 50 x 60 feet; blacksmith shop, 80 x 80 feet, and locomotive erecting shop, 160 x 180 feet. We understand that the purchases of equipment for the Wilmington shops have been deferred pending the decision as to the foregoing alterations of the original plans. We are officially advised that the plans for the new repair shops to be constructed at Trenton, N. J., by the Pennsylvania Railroad Company are not completed. The new wheel foundry and soft iron foundry, to be built at Burkett station, near Altoona, Pa., are now in course of construction, and the specifications for the mechanical equipment will soon be issued.

The announcement last week of the \$10,000,000 loan negotiated by the Union Pacific Railroad Company was received with interest in the trade. The particular interest shown in the machinery district is pinned to a hope that a considerable quantity of this money will be used in purchasing equipment for improving the shops of the road proper and the affiliated roads. The prolonged strikes at the Union Pacific shops which have recently been settled have prevented the usual improvements at the shops, and it is thought in the trade that these will now be made.

Considerable interest is shown in the trade in the re-organization proceedings under which the White Mountain Paper Company of Portsmouth, N. H., are passing. The majority of the bondholders succeeded recently in having W. F. Donovan appointed receiver. An opposing faction immediately formed itself from among the minority bondholders and others which endeavored to have the receiver removed. They suddenly changed their position, however, because it is said they discovered that the receiver had, without orders from the court, allowed certain creditors of the company to remove from the plant at Portsmouth some machinery sold by them. The object was to hold him responsible for this machinery under his bond. The opposition bondholders are now seeking an accounting from Receiver Donovan. The United States Circuit Court in New Hampshire has appointed Judge Reis of the Supreme Court of that State co-receiver with Receiver Donovan, the latter being directed by the court to report to Judge Reis and act only in conjunction with him.

It will be recalled that the White Mountain Paper Company made very extensive purchases of machinery in this market recently for the equipment of their Portsmouth plant. The company are capitalized at \$25,000,000.

The Ingersoll-Sergeant Drill Company are quietly purchasing portions of the machinery equipment for their new plant, which is being constructed at Phillipsburg, N. J. The foundry is about completed and the bulk of the equipment purchase. Some of the heavy tools for the large erecting shops have also been purchased, but the principal items of the new machinery equipment are as yet undecided upon. The purchases are being made from the Eastern offices of the company, and as yet a complete list of the tools required has not been issued. As the company are buying piecemeal at this time, it is thought in some quarters of the trade that they may continue this method until the entire equipment is secured.

The Remington & Sherman Company, whose New York offices are located at 38 Park place, New York, are shopping

for about \$15,000 worth of machinery, to be added to their plant at Philadelphia, which is now undergoing extensions. The new building will be 76 x 100 feet, three stories high, and will be equipped throughout with new and modern machinery required in the manufacture of safes, &c.

Equipment is now being purchased for a new foundry and machine shop to be erected by the Boocurd & Leyfang Mfg. Company of Bradford, Pa. The foundry is to be 100 x 120 feet, and the machine shop, 120 x 140 feet, with two 40-foot galleries. A three-story warehouse and office building will also be erected. All of the buildings are to be of fire proof, concrete construction, reinforced with steel. In addition to the ordinary machine tools, a foundry equipment, two 10-ton electric traveling cranes of 40-foot span, and a number of jib and hand cranes will be purchased. The machinery is to be operated electrically, and a central electric plant will be installed. A fan blast heating and ventilating system will also be installed. The company intend manufacturing steam engines, oil well drilling tools, air compressors, natural gas pumping machinery and gas engines. These machines will be built according to designs of Edward Gray, formerly of the Gray-Baird Company. Orders for the equipment of the plant will be placed as soon as possible, as it is desired to have the plant in operation by November 1.

We are advised that the Gisholt Machine Company of Madison, Wis., have recently increased their capital to \$750,000. Up to the present time this company have confined their efforts almost exclusively to the well-known Gisholt turret lathe. The demand for this tool in its various sizes and varieties has assumed such proportions that a very considerable increase in the manufacturing facilities of the company has been necessitated. Additions have recently been made to the plant both in the way of buildings and equipment that will double the former capacity. It is now officially announced that the company intend building other types of machine tools in connection with their turret lathe business, and that they are now ready to place upon the market a full line of boring mills. These machines will not be manufactured on a large scale, however, until the plant has been further increased. Contracts have recently been placed by the company for a large new foundry, which will be equipped throughout with modern appliances and will be of sufficient capacity to furnish all of the castings required.

The Eddy Valve Company of Waterford, N. Y., are erecting a new foundry, to be 100 x 150 feet in size. Orders for equipment are being placed. Among the contracts already awarded are one for a 15-ton electric traveling crane of 67 foot span, which was awarded to the Morgan Engineering Company; a 54 Paxson cupola, equipped with a positive pressure blower, and a hot air heating apparatus have also been decided upon, as has a portion of the power plant equipment. The latter will consist of a 100 horse-power Harrisburg engine and a 75-kw. General Electric generator. Pneumatic chipping hammers and molding machines will be used extensively. The contract for the air compressor plant has not been awarded as yet. In their machine shop the company will also place additional equipment, to include several new boring and turning mills of large and small capacity, lathes, grinders, &c. Within about three months, when the extensions are completed, it is expected that the plant will have been doubled in size.

Equipment for a large sugar refinery will soon be purchased by William L. Bass of 90-96 Wall street, New York. The machinery required will be of the standard types used for the manufacture of raw and refined sugar direct from the canes. The primary installation will consist of a plant for manufacturing from 4000 to 6000 tons of sugar in a season, with building and ground room sufficient to increase the capacity to 12,000 or 15,000 tons. A full line of railroad equipment, including cars, tracks, locomotives and yard terminals for a 36-inch gauge railway will be required. At the present the purchases for this account will include 6 miles of heavy rails, 100 cars and 3 locomotives. The primary installation for the power plant will include boilers of 750 horse-power, with space for increasing to 2000 horse-power. The regular line of cane crushing and refining machinery will be purchased. It is intended to expend from \$500,000 to \$600,000 on the plant at present, and it is thought that within three years the work will represent an expenditure of about \$1,200,000.

A fair sized power plant and street railway equipment will soon be purchased by the Ohio & Michigan Traction Company, whose principal offices are located in the Spitzer Arcade, Toledo, Ohio. Specifications for the equipment are now being prepared, and purchases will be made within the next 30 days. L. L. H. Austin, the secretary and general manager of the company, is seeking information in the trade as to general power plant and other appliances. The company are capitalized at \$1,650,000. The bonded indebtedness is to be \$1,000,000. The officers of the company are as follows: John H. Clauss, president; Harlow C. Stahl, vice-president; J. W. Pero, treasurer. Directors: Joseph Benson Foraker; Harlow C. Stahl, M. I. Wilcox, Theodore H. Jungk, John H. Clauss, Myron C. Briggs and William Ford. A high tension electric railway system will be built from

Toledo to Ann Arbor by way of Lambertville, Dundee, Azalia, Milan, &c. The company have secured an Ohio charter, and the survey of the lines is completed.

The Jacobson Machine Mfg. Company, manufacturers of air compressors, clutch pulleys, gas regulators, gas soldering furnaces, vises, &c., of Warren, Pa., have the plans drawn for two new buildings, one 230 feet long by 55 feet wide, and the other 255 feet long by 87 feet wide. They have also arranged to remodel and enlarge their office building. The contracts for the buildings are being awarded. Additional machinery will be installed, but the specifications are not ready as yet. The capital stock of the company will be increased from \$150,000 to \$200,000. The regular work of this concern has grown to such an extent that they have been forced to increase the capacity of their plant. They also expect to add some heavier work, which will materially increase their business. Electric traveling cranes will be installed in both buildings, and a modern heating and lighting plant will also be provided. The company expect to have the improvements completed this fall.

The Bureau of Supplies and Accounts, Washington, will receive bids until August 25 for a quantity of supplies for the Eastern yards, including machine tools, motors, windlass, locomotive crane, &c.

In another column are printed the bids opened July 14 for machine tools for the Eastern navy yards.

The following are the bids opened July 18, at Philadelphia, for the two steel twin screw seagoing suction dredges for the United States Government for service on the great lakes: Maryland Steel Company, Sparrow's Point, Md., \$165,000 each, time 11 months; Great Lakes Engineering Company, Detroit, Mich., \$200,000 each, time one year; Bucyrus Company, South Milwaukee, Wis., \$235,933 each, time ten months; John H. Dialogue & Son, Camden, N. J., \$242,000 each, time 14 and 16 months, respectively. It is said that the dredges will be the finest yet built for the Government. The suction machinery on each vessel will be able to pump a complete load of 1000 cubic yards of sand in 45 minutes, and will be fitted to work in channels to a depth of 35 feet. The engines will be vertical compound, of 750 horse-power and developing a speed of 10 miles an hour. The steam will be furnished by two Scotch boilers fitted with three Morrison corrugated furnaces of 40 inches diameter.

The following bids for coaling plant extension at Narragansett Bay, Bradford, R. I., were opened July 15 at the Bureau of Equipment, Navy Department: Snare & Triest, New York, \$446,000; Augustus Smith, New York, \$407,000.

Contracts for equipment are being placed by the Asbestos Mfg. Company of 426 Market street, Philadelphia, who are building a new plant at Port Kennedy, Pa. The boilers have been ordered from the Heine Safety Boiler Company of St. Louis, Mo., and the engines from the Watts-Campbell Company of Newark, N. J. Almost all of the machinery equipment required will be of a special nature and will be built under contract. Alvin M. Ehret, the vice-president and treasurer of the company, is in charge of the work.

The J. R. Vandyk Company of 8 Dey street are carrying a complete line of machine tools in stock, including Fosdick radial drills, metal saws. They report a most gratifying demand. Ralph J. Leavett, formerly with the Niles Tool Works Company, has accepted a position as sales manager with the J. R. Vandyk Company.

The Brown & Zortman Machinery Company of Pittsburgh, Pa., have opened an office and storeroom at The Bourse, Philadelphia, under the charge of R. G. English, where it is proposed to have constantly on the floor both Colburn boring and turning mills and Universal saw tables, Bradford lathes, Milwaukee milling machines and Higley as well as a full line of modern machine tools of standard manufacture.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, July 20, 1903.

A review of the general conditions of trade at this time would indicate that among most manufacturers there has been too much of the pessimistic feeling in regard to what they considered a letting down of business, or, in other words, that sort of a feeling as if something was going to happen. While it is no doubt true that trade is lighter than it has been for several months past, it is still far above the average, and the disparagement is only occasioned by comparing the present conditions, which are about normal, with the past conditions when everything was on the boom. Many shops are still behind in their orders and are working night and day in order to catch up. The month of June compared with that of last year was far in excess as to output, and July is showing up very well. Inquiries for fall trade are numerous and indicate great latent activity in machinery circles. The railroads are becoming extensive buyers, and many of the manufacturers are anticipating heavy demands being made upon them for this class of work within the next few months. The strike horizon is practically clear and a

general good feeling seems to prevail among both employers and men. This is true with possibly the exception of some anticipated trouble among the molders, which, it is hoped, can be averted and tide over. As conditions are at present little difficulty is experienced in securing materials and prompt deliveries are the rule. The proposed railroad deal of securing track room and terminal facilities on the river front has at last been consummated, and radical changes are expected to materialize in the near future. Just how this will affect the several machinery interests located in this section of the city it is impossible to predict at this writing, but as several of the larger plants stand directly in the line of progress it is safe to say that we shall hear of their changing location before many months elapse. The Industrial Bureau is now at work organizing a company for the manufacture of cars, both passenger and traction cars, the latter kind to be made a specialty. They have secured several practical men for their officers, and hope within the month to be able to capitalize for \$1,000,000. They have not fully decided upon a site, but have several under consideration on which to locate and erect modern, up to date car shops. The Racine Boat Mfg. Company of Racine, Wis., are contemplating moving their plant, and now have the matter up with the bureau looking to locating in this city. They employ a large number of men, and it is to be hoped can be induced to locate here. The structural iron men are still bending all their energies toward completing the many large buildings now in process of erection and those in contemplation.

The Lodge & Shipley Machine Tool Company, makers of lathes, are turning out more work than ever, and are very well satisfied with trade conditions. The president, Wm. Lodge, was recently quite seriously injured by being thrown from his carriage in a runaway accident, but is now convalescent and expects soon to be able to resume his duties.

The Lane & Bodley Company, builders of engines and one of the oldest concerns of their class in this section, have now removed their foundry works to their new modern plant, erected several months since on the line of the B. & O. S. W. Railway, near Bond Hill, Ohio. They cast their first wheel, weighing about 45,000 pounds, a day or two since, and are now running full blast. They have recently made a large shipment of a 750 horse-power engine for a sugar mill in Louisiana; a cross compound 18 x 36 x 42 engine for a traction road in Indiana; four large 750 horse-power engines each for the Commercial Distilling Company, Terre Haute, Ind.; two large engines for Marmet Coal Company, in West Virginia, to be used in increasing coal output; two pair large winding engines, of 1000 horse-power each, for Stewart Colliery Company, McDonald, W. Va. Also one 300 horse-power engine for sugar mills in Mexico; one 300 horse-power engine for Southern Rice Milling Company, New Orleans; one 1000 horse-power engine for Mooresville Cotton Mills, Mooresville, N. C. Trade is excellent and prospects very bright for the future. Harry Lane, the president, is now touring Europe with his bride.

The Block & Pollak Iron Company have recently built and equipped a new machine shop and made a large addition to their forge. They have put in some of the heaviest machinery that is in use in this section of the country, and are now equipped to turn shafts of largest diameter and 50 feet long. They have put in nine new lathes, a new slotter, a large planer, a boring mill and a 25-ton electric traveling crane. They have also put in an additional 250 horse-power Lane & Bodley engine, and a number of motors and generators from the Bullock Electric Mfg. Company, in the new forge building, which is entirely fire proof, in harmony with the remainder of their plant. They have also put in large shaping hammers, new cranes and new boilers.

The American Tool Works Company report the months of June and July as having far exceeded their anticipations, and that they compare favorably with the preceding months of the year. They have been making some changes in several departments, and by so doing have been enabled to materially increase the capacity of their plant. Foreign trade is reported as fair, with a general healthy domestic condition.

The I. & E. Greenwald Company, makers of engines and gears, are working night and day endeavoring to keep abreast of orders booked. They are now remodeling their offices, increasing the floor space and adding several large windows, made necessary by the trade offering.

The Belmar Machine Tool Company have had an exceptionally large trade during the past six months, and report that business during this time exceeded their most sanguine expectations. They have installed several new tools and added a number of new men.

The Bradford Machine Tool Company, who several months since suffered quite a serious loss by fire, have rebuilt and are now prepared to take care of all orders that offer. They have been steadily increasing their facilities for work and lately have installed quite a number of up to date tools, notably several very heavy lathes of their own manufacture, as well as other tools, and they expect within a short time to make further additions to their shop, with a view of being able to easily handle the business they feel sure will come their way.

The J. M. Robinson Mfg. Company are now at work on new patterns for machines for the bending of heavy iron. This bending machine is to be 10 feet capacity, instead of 8, as at present. They recently made a shipment of a 12-foot corrugating machine for a Dayton, Ohio, concern. Trade with them is good and practically about the same as last year at this time.

The Cincinnati Milling Machine Company are now at work raising the western portion of their plant from a two to a four story brick building. This they hope will be ready for occupancy by September 1. In addition to milling machines they also manufacture cutter grinders, which are proving veritable trade catchers. They are well satisfied with trade in general and can see no reason why the present activity should not continue.

The Bollman & Wilson Foundry Company, 500 to 530 East Front street, met with quite a serious loss by fire several days since. They are now at work clearing away the débris and have made arrangements whereby they are able to care for all trade that offers.

The Dreses Machine Tool Company have always paid special attention to foreign trade, and hence, while many of the shops were receiving but little in the way of orders from across the waters, these people have always been placing a fair proportion of their radial drills abroad. It is true that the major part of their output has been for domestic contracts, but the trade which has come from England, Scandinavia and Holland during the past year has been quite a material part of the general output. They are at work remodeling to a small extent their drills and adding quite a number of new features. They are now using their additional rooms, recently erected, and are able to handle more business than ever before.

The John H. McGowan Company, manufacturers of pumping machinery, are, to use their own words, "busier than ever." They have recently closed a contract for a 2,000,000-gallon crank and fly pumping engine for Martinsville, W. Va. They have secured a contract for the water works pumps and engines at Bremen, Ohio; furnished the Napier Iron Works, Nashville, Tenn., with pumping machinery; have a shipment for a sugar house outfit for Porto Rico, consisting of vacuum pumps, &c.; have a shipment of tobacco machinery for South Africa, and also one of pumping machinery for Japan.

Cincinnati Machine Tool Company have about perfected plans for their new building. This structure will be of brick and iron construction, 60 x 180 feet, with basement under entire plant, which will be used for manufacturing purposes. Work will commence within the next 30 days. They have not as yet contracted for their tools, power plant nor electric equipment and are now in the market for the same. Trade is excellent, with order books showing generous proportions.

## New York.

NEW YORK, July 22, 1903.

**Pig Iron.**—Aside from some stray inquiries from the State and from New England for prompt and nearby delivery there is very little doing. It is difficult to quote closely in the absence of transactions. The following prices, for delivery at New York and tidewater, represent the offerings of sellers: Northern No. 2 Foundry, \$17.75 to \$18.25; No. 2 Plain, \$17.25 to \$17.75, and Gray Forge, \$16.50 to \$16.75. Tennessee and Alabama brands: No. 1 Foundry, \$17.50 to \$18; No. 2, \$17 to \$17.50, and No. 3 Foundry, \$16.50 to \$17.

**Steel Rails.**—The market is very quiet, both for early and for 1904 delivery. Thus far there have been reported to the association sales for 1904 aggregating 450,000 tons. We continue to quote \$28, at Eastern mills, for Standard Sections.

**Cast Iron Pipe.**—The Eastern foundries have their capacity well covered on small sizes, but some of them are in a position to handle considerably more work in heavy Pipe, which is in rather limited demand. Orders for small sizes are being freely placed, and business of this character promises to continue through the summer and fall. Carload lots of 8-inch and under are quoted at \$34 per gross ton, at tidewater, and 12-inch upward at \$33.

**Finished Iron and Steel.**—The American Bridge Company report a very good run of orders of a moderate size. Among the contracts secured by them during the past week were the following: Bridge work for the Pennsylvania lines West, 2000 tons; for the New York, New Haven & Hartford Railroad, 750 tons; for the Central Railroad of Georgia, 300 tons, and for the Chicago, Burlington & Quincy Railroad, 2500 tons. They have also secured contracts covering a total of about 2000 tons for the erection of three power houses in different parts of the West. Quite a number of good bridge orders are coming in the market from the vicinity of Kansas City to replace bridges destroyed in the recent flood. The company have about all the quick time work they can handle, and therefore outside bridge companies will probably secure most of this rush work now coming up.

A great deal of building work is developing in this city, and important contracts of this character are likely to be placed in the immediate future. The practical settlement of the labor troubles in the local building trade must necessarily have a stimulating effect on the demand for Structural Material in this vicinity. The Eastern Bar Iron mills are now shut down to a great extent, but those still running are endeavoring to secure the old price of 1.70c., at mill. The Plate trade is showing signs of improvement. Inquiries are increasing, and a greater disposition is manifested to buy for stock. A Mexican order for 1800 tons for Riveted Pipe is in the market. We quote, at tidewater, as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.25c. Sheared Steel Plates, in carload lots, are 1.78c. to 1.85c. for Tank, 2c. to 2.10c. for Flange, 2.10c. to 2.20c. for Marine and 2.25c. upward for Fire Box. Refined Bars are 1.75c. to 1.90c.; Soft Steel Bars, 1.75c. to 1.90c.

**Old Material.**—Consumers appear to be purchasing absolutely nothing. Foundrymen seem to have no use for Cast Scrap, the rolling mills are either shut down or have all the stock they need, and the steel works are also at last out of the market. The supply of all kinds of Old Material is not only plentiful, but the offerings from the railroads are becoming increasingly heavy. Dealers state that they are being offered material at almost their own prices. The change from the condition of the market only three months back is simply amazing. At that time almost a famine existed, and now nobody appears to desire anything. Quotations are nominal in almost every case, as transactions are so very light that it can hardly be said that a market price really exists. We quote, New York and vicinity, per gross ton:

Old Iron Rails	\$19.50 to \$20.00
Old Steel Rails, long lengths	18.50 to 19.00
Old Steel Rails, short lengths	16.00 to 17.00
Relaying Rails, heavy sections	23.00 to 24.00
Old Car Wheels	17.00 to 18.00
Old Iron Axles	23.00 to 24.00
Old Steel Car Axles	20.00 to 21.00
Heavy Melting Scrap	16.00 to 17.00
No. 1 Railroad Wrought Iron	17.00 to 18.00
Iron Track Scrap	16.00 to 17.00
Wrought Pipe	12.00 to 13.00
Ordinary Light Iron	9.00 to 10.00
Cast Borings	7.00 to 8.00
Wrought Turnings	12.50 to 13.00
No. 1 Machinery Cast	15.75 to 16.00
Stove Plate	10.50 to 11.00

## Metal Market.

NEW YORK, July 22, 1903.

**Pig Tin.**—During the last week the market was very inactive. As a result of repeated efforts to create a little interest in the article prices fluctuated slightly, holders bringing about nominal advances. At the close to-day spot and July deliveries were offered at 27½c., with 27¾c. bid. August was quoted on 'Change, 27c. bid and 27¾c. asked. After the close these prices could be shaded ½c. The London market also advanced slightly, closing to-day £123 5s. for spot and £120 15s. futures. The arrivals this month amount to 1535 tons thus far, and it is reported that 2095 tons are afloat.

**Copper.**—Prices have again suffered a reduction, but the market is still extremely dull and weak. The "official" prices of the Copper Committee of the New York Metal Exchange are now 13½c. nominal for Lake and Electrolytic and 13c. nominal for Casting. Outside of the Exchange Lake and Electrolytic were offered at 13¾c., while Casting could be obtained at 12.80c., but there were no buyers. The London market also declined, closing prices being as follows: Spot, £56; futures, £55; Best Selected, £60 15s. The exports so far this month aggregate 4975 tons, against 6758 tons for the corresponding period of last year.

**Pig Lead.**—The market is considerably stronger, so far as spot and this month's delivery are concerned. The American Smelting & Refining Company still quote on a basis of 4.12½c. for Desilverized in carload lots, and 4.10c. for 50-ton lots. They will not, however, guarantee deliveries, hence the outside lots obtainable in the open market were quoted to-day 4.30c. bid and 4.50c. asked. The London market declined a shade to £11 7s. 6d.

**Spelter.**—The market is quiet, spot being quoted 37½c. and August 34½c. St. Louis telegraphs 51½c., and the London market has declined 10 shillings to £20 5s.

**Antimony.**—Hallett's, being quoted 6.50c., is unchanged. Cookson's 7.50c., and other brands 6.25c. The market is weak.

**Nickel.**—Is quoted at 40c. to 45c. for large quantities, and 50c. to 60c. in small lots.

**Quicksilver.**—A moderate business is reported, the market ruling at \$47.50 for flasks of 76½ lbs.

**Tin Plate.**—No change worthy of note has occurred in this market. Current transactions are of moderate proportions. Prices remain firm. The American Tin Plate Company's quotation continues at \$3.80 per box of 14 x 20 100-lb. Cokes, f.o.b. mill, which is equivalent to \$3.99, New York. Swansea declined 1½ pence to 11 shillings 4½ pence.

# HARDWARE.

WHILE the era of what may be termed the consolidation craze has passed, when the merging of interests, sometimes on very liberal terms, was regarded as a panacea for all trade ills, there is still evidence that the spirit which seeks organic unity in what would otherwise be competing interests is still abroad among both merchants and manufacturers. The times indeed, so far as the feeling of capitalists is concerned, are not propitious for floating such securities on the market, and there is a general recognition that much of the coming together of manufacturing interests has been under conditions which are far from sound and likely to present serious financial problems when the pressure comes. Several consolidations, indeed, which started out with a flourish of trumpets have already come to grief.

Notwithstanding these facts there is a perceptible tendency toward consolidation which does not seek to cover the entire line to which it relates but simply to unite interests which naturally come under one management. In this way manufacturers whose business and location permit it can sometimes come together with marked advantage, and merchants in the same or neighboring towns find that they can serve their own and the public interests by joining forces, thus securing economy in administration and at the same time better service. Such consolidation where it is justified by the special circumstances is in accordance with the trend of things in business, and is very different in principle and results from an attempt to effect some universal aggregation of interests—a foolish and impracticable project which tends to make consolidation ridiculous. Indications thus appear from time to time of a disposition on the part of competing jobbing houses for good and sufficient reasons to join forces; and even among the retail trade repeated instances present themselves of local competitors coming together.

In the strenuous competition which is the condition of business life it becomes the part of wisdom for manufacturers, jobbers and retailers to consider each in their own sphere whether anything in this direction is desirable. There should not be the broad assumption that consolidation will end trouble and make the path of trade smooth and prosperous, for it is often the beginning of trouble, nor should there be an unreasonable opposition to recognizing what is unquestionably one of the tendencies of the times and a determination to continue to go it alone. There are many cases in which a change in the relation and management of the business would be attended with grave peril, but in others, and especially if the success attained has been moderate, something in the way of a merger may put the united interests in a position of new enterprise, efficiency and strength. Any move in this direction is, however, a very serious matter, and the old maxim, which would leave well enough alone, is usually applicable.

## Condition of Trade.

Comparatively few manufacturers are seeking orders in an especially eager or aggressive manner. Some of them are still working on business booked months ago, though in most cases their books are much better cleared up than for a long time. Others are availing themselves of the opportunity to get stocks in shape for the calls of trade when the demand sets in again with vigor, and will be glad to be in a position in which they can execute or-

ders more completely and promptly than has been the rule during the era of exceptional pressure on their manufacturing facilities. Nearly all, too, are giving more attention to the manufacturing as distinguished from the selling department of their business, and are accordingly doing a good deal in the way of overhauling plants, making repairs, increasing producing facilities, and in general getting into readiness for an active business. There is general recognition that the trade are not in a mood in which it is wise to urge them unduly to purchase goods, as most of the larger buyers have covered their requirements for at least the early fall, and are refraining from purchasing too far ahead on account of the uncertainties of the market in price or volume of business. As a result of this condition of things, while orders coming in to the manufacturers are comparatively light this is not regarded as indicating an interruption of large and prosperous business, but as what should be expected in the present state of things. While those under the influence of the downward course of values in Wall Street are tempted to hesitate in their confidence as to the continuance of large and profitable trade, it is a reassuring consideration that the views of merchants and manufacturers throughout the country generally are decidedly hopeful, and that the prevalence of prosperity among the people at large is so marked as to justify anticipations of good fall business. This view of the situation is confirmed by the crop reports, which, taken all in all, are certainly such as to give a substantial basis for a large volume of trade, unless, indeed, there is unexpected disturbance of business on account of the development of financial trouble of some kind, or other unforeseen adverse influence. Prices in the Hardware and related fields are without important open change. Heavy goods which feel immediately the effect of a decline in the raw material are yielding in a good many cases, and a general revision of quotations in such lines is going on. The great mass of miscellaneous and Shelf Hardware and manufactured products generally in which the labor cost is the principal element are held steadily. This is partly because the cost has not as yet diminished, and, indeed, still tends to increase, as the advance in labor and other expenses counterbalances the reduced cost of the material. The fact also, to which reference is made above, that the manufacturers are not as yet entering the market aggressively has a great deal to do with the existing steadiness. There are indications that export business is receiving more attention than in the days of an imperative home demand, and many manufacturers are looking wistfully to foreign fields and laying their plans to enter them.

### Chicago.

(By Telegraph.)

An unusually conservative temper seems to possess the Hardware interest, there being a disposition, especially in heavy lines, to keep stocks at a low point, to be in position to take advantage of any turn in the market. It is evident to most dealers that all conditions are against any advance in prices, and there is therefore a determination to purchase less far ahead than has been the custom within the past year or so. On the other hand both manufacturers and jobbers are convinced that they will experience a very satisfactory trade during the fall and winter, basing their expectations upon excellent crops already secured and others in sight. The tendency toward liquidation in financial circles, too, while tending toward a contracting in business for the moment will eventually add to the stability of the market, if not to the volume of future trade. Manufacturers' agents of Shelf Hardware and jobbing lines are generally experiencing a quiet trade, but there are some important exceptions to the rule, agents located in this section having drawn some very satisfactory orders from jobbers in St.

Louis and one or two other Western cities within the past ten days. Included in these lines have been contracts for various articles of Builders' Hardware. The placing of the contract for the new terminal station at Indianapolis was awarded to an Indianapolis firm within the past few days, and the contract for the Iroquois Theater, which was placed with a local dealer recently, has been divided among four Eastern manufacturing firms. Bids are now being made for the Hardware for a new hospital at Kenosha, the estimated cost of which building is \$200,000. Several other moderate sized contracts for Builders' Hardware designed for apartment buildings for a few towns in the Northwest have been booked recently, but the Chicago trade proper has been very quiet. Building operations in Omaha have been especially seriously interfered with by strikes of various kinds, and even at Minneapolis, where there has been less trouble than elsewhere, building operations are considerably less than they were a year ago. The most prominent new feature of the jobbing trade is the beginning of early shipments on fall orders, mainly for Shells and other Ammunition, Scoops and Axes. The vacation season is now on in full force among the employees of local jobbing houses, and not a few of the traveling salesmen have temporarily laid off, affecting quite seriously the volume of new business being received from the country trade, and yet the largest houses report that the month of June showed returns considerably in excess of those of a year ago, and that the month of July thus far is making very favorable comparisons. One or two jobbers report an exceptionally good trade, having their shipping force working at night one day last week with a probability of repeating the occurrence during the current week. Nails and Barbed Wire are especially dull, as usual at this season, and in all other heavy lines there has been a decided falling off recently. This includes Nuts, Washers, Bolts, Plates, Sheets, Chain and other similar goods, the weakness displayed in raw material affecting these goods more than lighter lines. Reports of cutting in prices of Black and Galvanized Sheets have been especially notable, there being a tendency toward a decrease in trade in consequence. A few jobbers have been able to secure a little better supply of Tin Plate, but the largest houses still report very light stocks, and little, if any, improvement in deliveries.

#### St. Louis.

(By Telegraph.)

General conditions in the Hardware market seem unquestionably sound, and recent intercourse with dealers bears out an opinion which is quite convincing. Harvest time is always a period of lighter trade, and while this year has been no exception to other seasons, July thus far is said to figure a better general volume of sales than a year ago. The record of sales for the first half of the year makes a fine showing, and there seems no sufficient reason why the trade should not anticipate equally as good, if not better, figures for last half. While not nearly under full swing the demand for fall supplies is large. The tendency to a lower level of prices for Pig Iron and other metals is perhaps responsible for hesitancy in purchasing, both by the jobber and dealer, of certain manufactured lines.

#### NOTES ON PRICES.

**Wire Nails.**—The market remains quiet, demand being restricted to small orders. Mills are preparing for the fall trade, which, it is expected, will be large. The market remains firm at the following quotations, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots..... \$2.00  
Retailers, carload lots..... 2.05  
Retailers, less than carload lots..... 2.15

**New York.**—While store business continues light, the prospect for larger and more frequent orders from nearby territory in August is encouraging. The market is firm at the following quotations: Single carloads, \$2.20; small lots from store, \$2.25 to \$2.30.

**Chicago, by Telegraph.**—While the volume of new business coming forward is very light and stocks are accumulating, both the new orders and shipments, as com-

pared with a year ago, show an increase and the outlook for fall trade is extremely satisfactory. Notwithstanding the dullness prices are well sustained, sales being made at \$2.15 to \$2.20 in carload lots, f.o.b. Chicago. Broken cars sell at 5 to 10 cents higher. For galvanizing 75 cents per keg and for tinning \$1.50 extra per keg is charged.

**St. Louis, by Telegraph.**—Store trade is light and jobbers quote \$2.35 in small lots.

**Pittsburgh.**—Demand is very light, and is altogether for small lots. The mills are carrying heavy stocks, for which they expect to have an active demand when fall trade starts. The market is reasonably firm and we quote: \$2 in carloads to jobbers, \$2.05 in carloads to retailers and \$2.15 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days. For galvanizing Nails 75 cents per keg is charged and for tinning Nails \$1.50 per keg extra.

**Cut Nails.**—Demand is light, but steady. The market remains firm at previous quotations, which are as follows: \$2.15, base, in carloads and \$2.20 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

**New York.**—The local market remains quiet, with light demand from store. Quotations for carloads and less than carloads are as follows: Carloads on dock, \$2.29; less than carloads on dock, \$2.33; small lots from store, \$2.40.

**Chicago, by Telegraph.**—The few new orders being received by the mills are filled promptly at previous prices, stocks having accumulated recently, which, however, is desirable in preparing for the fall trade, which bids fair to be very satisfactory. The market continues steady on the basis of \$2.30 in carload lots and \$2.35 in less than carload lots for Steel, Chicago; Iron Nails are held at \$2.45 to \$2.50 per keg from store.

**St. Louis, by Telegraph.**—Demand is very moderate and jobbers continue to quote in small lots from store as follows: Steel, \$2.40; Iron, \$2.55.

**Pittsburgh.**—Demand is for small lots only and the mills are able to make prompt shipments from stock. The expected improvement in demand by reason of the settlement of some of the strikes in the building trades has not yet developed. We quote: Steel Cut Nails, \$2.15, base, in carloads and \$2.20 in less than carloads; Iron Cut Nails, \$2.25, base, in carloads and \$2.30 in less than carloads, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days.

**Barb Wire.**—There are few new orders being placed, mills being employed to a great extent in filling contracts. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.30	\$2.60
Retailers, carload lots.....	2.35	2.65
Retailers, less than carload lots.....	2.45	2.75

**Chicago, by Telegraph.**—The mills continue to accumulate stock, new orders being light and specifications on previous contracts being well in. However, business compared with the corresponding time a year ago shows a slight increase both as regards shipments and new orders. The outlook for fall trade is very satisfactory and the market for the present remains steady, as previously quoted: Galvanized Wire is selling on the basis of \$2.75 to \$2.80 in carload lots and Painted at \$2.45 to \$2.50, the outside price being to retailers. For small lots 5 to 10 cents extra is charged. Staples in carload lots sell as follows: Polished, \$2.30 to \$2.35, and Galvanized, \$2.70 to \$2.75, the outside price being to retailers.

**St. Louis, by Telegraph.**—Trade is now of a light order, but improvement is expected soon. Jobbers quote in small lots: Painted, \$2.60; Galvanized, \$2.90.

**Pittsburgh.**—The mills have practically filled all their old contracts and current demand is very light. Prices are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.30; Galvanized, \$2.60, in carloads to jobbers; Painted, \$2.35; Galvanized, \$2.65 in carloads to retailers; Painted, \$2.45; Galvanized, \$2.75, in small lots to retailers.

**Smooth Fence Wire.**—Mills continue busy, with a fair amount of new business, and filling contract orders. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.90
Retailers, carloads.....	1.95
Less than carloads.....	2.05

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	10	11	12 & 12½	13	14	15	16
Annealed.....	Base. \$0.05	.10	.15	.25	.35	.45	.55
Galvanized.....	\$0.30	.35	.40	.45	.55	.65	1.05

*Chicago, by Telegraph.*—Orders for Smooth Fence Wire show some falling off, yet prices are well sustained, but for manufactured Fence the demand continues unusually satisfactory, both specifications on contracts and new business showing a remarkable and steady growth. The tone of the market continues firm, prices remaining unchanged, as follows: Nos. 6 to 9, \$2.05 to \$2.10 in carload lots on track, and \$2.15 to \$2.20 in less than carload lots from store; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

*St. Louis, by Telegraph.*—The market is quiet, but firm. In lots from store jobbers are asking \$2.35 for No. 9, with the usual 30-cent advance for Galvanized.

*Pittsburgh.*—A fair amount of new tonnage is being placed, but it is mostly for small lots. Specifications on old contracts are still being received by the mills. We quote: Plain Wire, \$1.90, base, for Nos. 6 to 9 in carloads to jobbers, \$1.95 in carloads to retailers and \$2.05 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

**Iron Rivets.**—The market for Iron Rivets has recently been put in better shape, as the manufacturers who have been acting independently have come together and agree in announcing advanced prices. The quotation to the general trade may be stated as from discount 75 to 75 and 10 per cent. Jobbers undoubtedly have large stocks and are in a position, if they desire, to shade manufacturers' quotations somewhat.

**Building Papers.**—There is little change in the prices of Building Papers. Tarred Felts, &c., the prices made by the combination of manufacturers, the larger proportion of the production being under one management, being still rigidly maintained. Rosin Sized Building Paper is quoted at \$34 per ton, making rolls of 500 square feet, 25 pounds to roll, cost 42½ cents per roll, 30-pound rolls 51 cents and 40-pound rolls 68 cents. Tarred Felts for roofing and similar purposes are quoted for single ply, \$32.50 per ton in carloads and \$35.50 for less than carload lots. The Two-Ply Felts in carloads are 55 cents per roll, Three-Ply 78 cents; less than car lots being respectively 60 and 85 cents per roll for Two and Three Ply. The above prices obtain in Eastern territory, the greater distance from source of supply increasing the cost to cover freight.

**Binder Twine.**—The general belief expressed by manufacturers throughout the country is to the effect that there will be no shortage of Twine for binding wheat, and that there is likely to be a surplus. This opinion is based upon the changed conditions in crop reports as harvest progresses, light straw, &c. The demand from mill in the East is restricted to small lots, and the market is represented by quotations ranging from 11 to 12 cents, according to seller, for Sisal and Standard. The range of prices at Western points appears to be from 11½ to 12½ cents by independent mills and jobbers.

**Cordage.**—Demand keeps up in good volume for the season. Quotations, on the basis of 7-16-inch and larger, range with different manufacturers as follows: Sisal, according to quality, 8½ to 10 cents; Manila, 11½ to 12 cents per pound. These prices are shaded ¼ cent per pound in large quantities. The market is not regarded as exceptionally strong.

**Paris Green.**—The light demand is a conspicuous feature in the market. The schedule of prices given herewith is not adhered to very rigidly, and small lots are frequently quoted at ¾ to 1 cent below the schedule.

Less than 1 ton.	Per lb.
Arsenic kegs or casks.....	13½c.
Kegs, 100 to 175 pounds.....	14c.

Kits, 14, 28, 56 pounds.....	15c.
Paper boxes, 2 to 5 pounds.....	15c.
Paper boxes, 1 pound.....	15½c.
Paper boxes, ½ pound.....	16c.
Paper boxes, ¼ pound.....	17c.

One to 5 tons, 1 cent per pound less; 5 tons and over, 1½ cents per pound less.

**Glass.**—The market remains quiet with no interesting features. The matter which will be prominent in Glass circles for some time will be the next wage settlement. The Glass workers' organizations, of which there are two, are now discussing the question, but it will probably be some time before any conference between the manufacturers and workmen will take place. The Jobbers' Association's quotations are as follows: In small lots, 90 and 5 per cent. discount for the first three brackets and 90 and 5 per cent. discount for all sizes above, either single or double strength.

**Oils.**—*Linseed Oil.*—The Seed market continues in an unsettled condition, and values are receding, owing to the large amount being received at Northwestern points. Demand for Oil is consequently light and is confined to immediate requirements. It is reported that large buyers would place orders for future shipment at 33 cents, but that no Oil is obtainable at this price, as the cost of crushing at the present cost of Seed is about 33½ cents per gallon. The future price of Oil depends largely upon the trend of the Seed market. Quotations are as follows: City Raw, in lots of five barrels or more, 38 cents; in lots of less than five barrels, 39 cents per gallon. Out of town brands of Raw are quoted, according to quantity, at 35 to 36 cents per gallon.

**Spirits Turpentine.**—Demand has been better in the local market since our report last week. There is a firmer undertone to the market, although no change in quotations have taken place. These, according to quantity, are as follows: Oil Barrels, 51 to 51½ cents; machine made barrels, 51½ to 52 cents per gallon.

## R. W. WHITEHURST COMPANY

After a shut down of three weeks, during which a large amount of the most approved machinery has been installed and the capacity materially increased, the plant of R. W. Whitehurst Company, Norfolk, Va., has again resumed operations in full. The company are manufacturers of Agricultural Implements, Rollers, Step Ladders, Hose Reels, &c., and are now in excellent position to take care of their constantly growing business.

The old established and well-known firm of J. B. Shannon & Sons, retail Hardware merchants, Philadelphia, Pa., have removed from 1020 Market street, which they have occupied for a term of years, to 816 Chestnut street. Their new store bears the distinction of being the one Hardware establishment on that important business thoroughfare, and the new quarters have been made one of the most attractive in this section. Every convenience and modern improvement for conducting a large retail trade has been installed. "Shannon's" is even more than a Hardware store. For years they have carried, besides a large stock of everything in Hardware, a general line of House Furnishings and Sporting Goods. General repairs and the manufacture of Metal Goods has also been a strong feature of the business.

**THE MASSACHUSETTS SAW WORKS,** Springfield, Mass., manufacturers of Hack Saw Blades and various Saw Specialties, such as Saw Frames, Butchers' Saw Punches, Coping Saws, Saw Cabinets, Band Saws, &c., have appointed A. Z. Boyd, 56 Reade street, New York, as their direct salaried representative in this city. The new cabinet referred to above is made of hard wood finely finished and has a capacity of 50 gross assorted Hack Saw Blades in original packages, the cabinets, ordinarily sold for \$5, being sent gratis to customers carrying their Saw Blades in stock.

## HARDWARE FACTORY COST METHODS.

The following comprehensive and valuable paper by Thomas L. Greene, vice-president of the Audit Company of New York, was presented at a joint session of the Southern Hardware Jobbers' Association and the American Hardware Manufacturers' Association at Saratoga Springs, N. Y., on July 16. Its suggestions, covering as they do many important points, deserve careful consideration:

### MANUFACTURING ACCOUNTING AND COSTS.

Your management has asked me to address you this morning on the subject of "Manufacturing Accounting and Costs." The importance of good accounting has only been recognized of recent years. Correct information is a prerequisite to profitableness in all lines of staple manufacture and trading and is essential also to the formation of any line of policy regarding the conduct of the business. Correctness in accounting involves two elements: First, good judgment as to the classification under which the facts of the business are presented in figures, and, next, the accuracy with which the figures themselves are assembled. As to the bookkeeping proper, it may be said that the principles as applied to business concerns are comparatively simple; it is in the application of those principles to actual transactions that complications arise. It is for this reason that I would not call accounting one of the exact sciences. It is true that the study of bookkeeping in all its ramifications may be carried on in a scientific spirit, but the details of such bookkeeping must vary according to the needs, the dangers and the required safeguards in each particular cause. The art, as I prefer to call it, of accounting may be said to consist in presenting the facts of any business, large or small, in a manner which shall reflect the real commercial conditions of such business. The mere items of debit and credit will not arrange themselves properly without the aid of some one having knowledge and experience; herein lies the reason for the rise of the new profession of accountancy, one of the youngest of professions but one whose future seems assured.

#### REQUISITE QUALIFICATIONS OF THE ACCOUNTANT.

To make his business worthy of the name of profession the modern accountant must be well grounded not only in the technicalities of bookkeeping and in the many ways in which they can safely be expressed, but he must have such knowledge of affairs and such experience as will enable him to express business facts in a way that will agree with the commercial situation. Just as the lawyer, to be successful, must be well grounded in the theories of law and at the same time have good judgment as to the application of abstract principles to concrete instances, so the good accountant must be able to put the true position simply and clearly before his clients.

#### ACCURATE COSTS DEPEND ON BOOKKEEPING.

Accounting for manufacturing may be divided into two parts: First, the general or financial books, and, second, the cost records. Let no one delude himself with the idea that he can have a good cost system without good general books. In one or two cases which I have in mind disappointment as to the profits was owing to the fact that the statistics which showed by estimates what the company ought to be doing were not in accord with the results as shown on the financial books. A good general system of bookkeeping and a good cost system are like liberty and union, one and inseparable. The information necessary for ascertaining the costs of manufacturing can be obtained only from general books so arranged as to furnish a general view of the financial condition of the company or firm, and at the same time to afford a basis for the distribution of the expenditures later on between the different articles produced. No manufacturer who contents himself with running everything into an account called "Merchandise" or some other comprehensive title, can hope to know what the cost of manufacturing, as between articles separately considered, can be. This is the first test then of a good system of accounting for manufacturing, that the general books should show in a

condensed way the true position of the firm or company; that such books should be arranged so as to allow of easy distribution of the general items under such headings as are required by that particular factory so that such distributed figures of expense could in turn be made the basis of at least a close approximation of the cost of the individual articles. The bookkeeping of our large railroad systems has been a matter of evolution for 50 years. If any one of my hearers is interested in this part of the subject and has the time, it would pay him to call at some railroad accounting office and get a general idea of the simplicity of the system as a whole and of the complexity of the various parts of that whole. He will find that the general ledger of the railroad has all the large expenditures under but four heads, though subsidiary books carry out the details of these four headings under 150 different accounts. Certain important manufacturing concerns indeed carry out their bookkeeping in a reversed order; in their books practically the cost system comes first and the general books afterward; it is also true that with great care such a system may be made to give approximately accurate results, but it is a system which, because of its manifest dangers of error, cannot be recommended as the best.

#### IMPORTANCE OF THE INVENTORY.

The inventory merits careful attention. It is needless to say that an exact account of the stock of materials on hand by count, weight or measurement should be had at stated intervals, at least once per year. Because of its importance great care should be exercised; specially designated men should count or measure the quantity of this or that article in a particularly defined bin or room or space, marked on the floor with chalk if need be. Each one of such men should file his original papers at the office signed by his name as a true statement, before a witness if desired; such papers will contain such brief comments as will describe the goods and also will enable the price officers to judge of the condition. After the quantities have been ascertained, such inventory should be taken into the books at cost prices or market prices, whichever is the lower, allowances being made for goods damaged or out of style.

#### VALUE OF A LIVING INVENTORY.

If manufacturers are prepared to give the necessary time and attention and possibly some little expense to an arrangement for a so-called book or living inventory, they can have a statement, approximately correct, of the amount of material then on hand at the end of the month and the amount which has been consumed in manufacturing. Such a monthly statement of the stock of materials has several advantages—one that it is an important factor in the preparation of a correct financial exhibit monthly; another that it tends to more care in the disposal of raw material, now made a matter of record, and another that it leads into a proper system of manufacturing costs. Still another advantage of a careful book or living inventory, calculated by debiting and crediting the quantities received and used, is that in many cases it will be found unnecessary to stop the works or to close down but a short time in order to take an inventory by count, for the reason that the quantities can be counted when the stock is low at the end of any convenient month; moreover, the different departments or different kinds of material can be inventoried on different months and the results compared with the stock keeper's records for each department or class separately. Some of the smaller concerns in the United States do not take careful inventories; perhaps because owing to the absence of any cost system they do not know at what price to include the items of their product wholly or partially completed. Wherever possible such partially or wholly completed articles should be taken into the inventory at their exact cost of manufacture. In cases, however, where a concern has large contracts on hand which require considerable time for their production, it is fair to include some portion of the profits monthly in the ledger by an arrangement of entries, as otherwise the concern would show no profit for a considerable period, and then a large profit. I have suggested that the articles which are partially or wholly finished should be taken into the inventory at their exact manufacturing cost, as closely as this can be ascertained, and by that I mean that no portion of the selling or general expenses should be added, nor should they be carried at the prices for which they can be sold.

#### MEDIEVAL RECKONING.

I remember an old gentleman, one who for many years had occupied a prominent position in the manufacturing world, who, it was found, always added into his costs all his selling and general expenses, and as I remember, interest charges, too, in making up his inventory of finished products. If this inventory had been the same from year to year, little harm would have been done so far as his profits were concerned, although the value of the asset on the balance sheet would have been overestimated; but as it happened that there was a great difference between the end of the year as compared with the beginning, his profits for that period were overstated. The old gentleman stoutly contended that his system of bookkeeping was correct, but it was shown to him that according to his system he might have run his factory night and day, piled up all his goods in his warehouse without selling a single package and at the same time have shown large profits at the close of his fiscal year.

#### SOME METHODS ANALYZED.

It is the custom in some trades where goods are manufactured under orders to take the manufactured but undelivered goods at the close of the year into the accounts at the prices contracted for. I believe that such is the general custom in certain lines of manufacturing at this date, and while the aggregate of profits over a number of years may not be affected by this method of inventorying manufactured goods at selling prices, yet the profits for any particular year may be considerably over or understated by such accounting. There is really only one source from which profits can be said to be made by a manufacturing concern, and that is from sales. The taking of an inventory is not of itself a source of profit, but is the process by which we endeavor to eliminate all factors extraneous to the period under review and thus confine the profits to the actual sales, less the actual cost of production. It is only under unusual circumstances that it can be considered correct accounting to take in the finished product at anything more than the actual cost of manufacture, including all items which can be properly put under that heading. Without going into too much detail many reasons will occur to all why this statement is a correct one; such, for example, as the fact that a fire may burn the goods and thus destroy the so-called profit, for certainly no insurance company would reimburse the owner for more than the cost of his product. No real profit is made until the goods are delivered and the obligation of the customer is placed upon the manufacturer's books.

#### REASONS PRO AND CON

It is at times very difficult to draw the line between betterments and operating expenditures. It is better that the manufacturer after keeping a record of the minor improvements for his own information should charge such ordinary improvements off through his profit and loss, but not through his manufacturing account. Much controversy has raged about the proper method of treating improvements, particularly in railroad accounting. The general thought which I would advance for your consideration is this, that no additions to property and no improvements to buildings or machinery should be considered as proper charges to capital account, and therefore not to be deducted from earnings, unless it can be clearly seen that such additions or improvements either increase the earning capacity or decrease the expenses of the business. This definition of betterments is not so harsh as the charging of all improvements against the revenue, no matter how important they may be, nor so easy as the English practice of charging to capital every item which can be technically considered as an addition—even a shanty, with the resulting distribution in dividends of a larger proportion of the earnings each year. Of course the same result as to the cash is reached if we capitalize such items and show larger profits which are not divided among the shareholders; but this latter method has the disadvantage of overstating the profits from a commercial point of view.

#### WORKING CAPITAL.

Another matter of consequence is working capital. As every business man knows, it requires considerable sums of money to carry the accounts of customers, the raw ma-

terial, the force of employees and other like items until the money from the sales may be expected. The amount of necessary working capital will vary according to the kinds of business. In the building of steamships, for example, it is very large. Not a few of our combinations of recent years are vulnerable at just this point, for, having been formed without adequate cash capital, they may be obliged to borrow largely from the banks to supply their need for ready money; and this need is the larger, the higher the prices for material and labor. If during the past few years of prosperity such combinations have not taken a fair portion of their earnings to pay off their bank debts, and if they still owe an undue amount of borrowed money, they are not in good financial condition. Indeed the present bank situation in New York City has a note of warning in it for all those manufacturers who have a large proportion of current liabilities and a small proportion of current assets. Certainly every combination of manufacturers which may be formed during the next few years for self protection and on a fair business basis, should have an adequate amount of cash for this important need of working capital.

#### DEPRECIATION AND BETTERMENTS.

I approach the vexed question of depreciation with a feeling of trepidation. Perhaps no subject connected with the accounting of manufacturers has been the subject of so many differing opinions. For example, it is a common remark for a man to say, "My factory has been kept in excellent repair, and therefore nothing need be set aside for wear and tear." But repairs to properties and depreciation are not the same thing; the one relates to the keeping up of the machinery as it is, and the other looks forward to the time when that machine will have to be thrown out and a new one substituted. When that time comes the prudent manufacturer will have allowed for that contingency by deducting from his earnings each year a proportion of the cost of that machine. If we estimate that that machine will do good work for 20 years and then become worn out or obsolete, then technically 5 per cent. of the cost has been consumed in producing the manufactured goods each year in addition to whatever repairs may have been made, for repairs pure and simple do not affect this reasoning, except as they may influence our opinion as to the life of that machine; nor do renewals of parts. Actual additions and improvements to machinery may be capitalized if they conform to the definition of improvements which I have just ventured to suggest to you. In such matters conservatism is the safest policy, for, as everyone knows in these days of invention, one cannot be sure when a new machine may be put upon the market which will supersede the old. The manufacturer who does not as quickly as possible substitute a new and efficient machine for an old or inefficient one, even though not worn out, will not after a while be able to compete with his neighbors.

#### A CARNegie EXAMPLE.

It will be remembered that one reason for the great success of Mr. Carnegie was his pronounced determination to spend any amount of money to increase the efficiency of his works, and to replace one set of machines at once with another if the latter could be worked by fewer men; it is told of him that he would at times thus throw out old machinery still in good working order to the value of \$1,000,000. Such contingencies affect all manufacturing, and he is wise who has a fund in reserve to use for just such emergencies.

#### AMOUNT OF DEPRECIATION AN OPEN QUESTION.

Yet after all is said the precise amount which should be set aside each year for depreciation is a matter for discussion; accountants have learned by experience that in a general way depreciation will vary from 2 to 10 per cent. of the cost of buildings or machinery, but even when the percentage may be estimated the determination of the depreciation in dollars and cents may be as difficult as ever, because of lack of knowledge of plant cost. Companies are usually capitalized on their supposed earning capacity, and this involves an issue of bonds and shares much beyond the intrinsic value of the land, buildings and machinery. When earnings are conservatively estimated there can be no valid objection to this course, for a manufacturing firm or company with an established reputation which cannot earn at least 12½ per cent. on

the actual value of its assets cannot be considered successful. Such a company, as a general rule, will include on its balance sheet under the head of "Cost of Properties" the good will or franchise value; thus the actual value of the buildings and machinery on which the percentage of depreciation must be figured is not on the books. It is my own opinion that the question of the proper amount of depreciation, involving as it does the matter of the sufficiency of repairs, the efficiency of machinery and similar items, should be determined by engineers whenever practicable. In a number of cases I have recommended to large corporations the advisability of having their real estate, buildings and machinery appraised by experts—but on a banking and not on a fire insurance basis. The latter basis is important, too, but does not touch the question of loans and mortgages, which is the thought at present in mind. Besides helping out on the depreciation question and affording the manufacturers the means every few years of ascertaining how far the plant has been improved or has deteriorated, such a banking appraisal of a concern's real property would have the advantage of enabling the company, should it so wish, to set forth in its balance sheet the real value of all its assets, with its good will in a separate account.

#### WHERE SENTIMENT IS AN ABSTRACT QUANTITY

My experience leads me to believe that if the corporations large and small would thus make a clear statement of their financial resources, and if such a showing should bring into clear light the fact that the value of their land, buildings and machinery, customers' accounts and stocks of material on hand should exceed (or at least equal) the amount of their preferred stock, (or mortgages and preferred stock) such shares thus being declared to be covered by assets of at least equal value, such concerns would be regarded in Wall Street in a more favorable light than they are at present. It must be admitted that the recent failures of prominent industrial companies have in the minds of investors and in the opinion of bankers thrown a suspicion on all industrial shares, which is unjust to many a company whose affairs are reasonably prosperous and whose condition is financially sound. This in brief is one way in which I think that the prevailing skepticism regarding industrial undertakings could be met—by the putting forth by our prominent companies of the actual facts regarding their assets as well as their profits. Wall Street—and both investors and bankers are included under this term—is forever "discounting" all statements. Where inflated values are put upon enterprises Wall Street is the first to cut such values in half; conversely, where conservative statements are made, Wall Street, when it finds that fact out, thinks more highly of that enterprise. One word more regarding depreciation: The amounts deducted from income for such a reason are not lost to the company by reason of such deduction, but remain in the treasury and may be represented on the liabilities side of the balance sheet by reserve accounts; as these accounts are swelled by the amounts deducted annually from earnings the company will get credit in the eyes of the public for the total amount thus set aside and appearing in their statements. Such reserves need not be deducted from the cost of property; they are of course available for any renewals or replacements which can properly be charged thereto.

#### PATENTS, HAND TOOLS, PATTERNS, PROFIT AND LOSS, &c.

Time will not allow me to discuss at any length other items of interest in a manufacturer's balance sheet; the patents, which may be included under good will if of permanent value or written off annually if of temporary advantage only; the hand tools, which by some form of treatment should be made to stand on the books at a conservative valuation; the patterns and drawings (a vexed and vexing account), which should be severely written down at the expense of earnings unless clearly of every day use; the investments, if any, which need not be reduced on the books, generally speaking in the manner that banks write off bond premiums, since such investments are incidental to manufacturing but in banking are one of the articles dealt in; the profit and loss account, whose balance, if possible, should represent nothing but profits fairly earned and left in the business; the keeping of customers' accounts in a separate ledger, with a controlling account in the general ledger so arranged in connection with special columns in the cash book that the controlling account is capable of bookkeeping proof, distinct from the

separate customers' ledger; the avoidance of the necessity of keeping ledger accounts with those from whom purchases are made, unless a few of such accounts should be needed for purposes of information. When we have studied all the items which go to make up a manufacturer's general books and have made up our minds as to the proper disposal of the difficult problems according to the circumstances of each particular case—for as before stated, accounting is a matter of knowledge, experience and common sense—and when in this way we have before us statements showing the main accounts, we are then, and only then, in a position to consider a proper cost system; for a good cost system is not to be put together off hand, but is a problem of thought and care and of evolution.

#### PRODUCTIVE AND UNPRODUCTIVE LABOR.

If the general books, the register of expenses and similar books are carefully designed we can first of all determine the general average cost; we can separate the items which go directly into the work, such as the material used and the wages of the men employed on particular pieces or groups of pieces—sometimes called "the productive labor." As every one knows, there are many items not chargeable to any one kind of work, but which are certainly manufacturing expenses, such as cost of power, steam or electric, wages of foremen, repairs and depreciation. There is a difference of opinion as to the best basis for distributing these latter expenses among the articles produced. For myself I prefer the method of charging such "unproductive" items on the basis of the productive or direct labor. Such "loading" or "overhead expenses" may vary from 50 to 150 per cent. of the direct labor. In this way we have probably the fairest method of distribution, for if a longer time is required to turn out a particular bit of product so that it should be loaded with a larger share of repairs to a lathe, let us say, then, that machinists' time is a good basis for such greater proportion of cost of power and similar items. The cost of the raw material is not so good a basis as labor for subdivision of manufacturing expense.

#### THE BASIS FOR PROPER COST ACCOUNTS

With the proper books for general accounts and with proper subordinate books showing a separation of the expenses into columns giving the subdivision needed in that particular factory, we are now prepared to make up a general manufacturing statement which shall show what the factory is doing in totals; and from this statement statistics can easily be drawn showing the total average cost in productive labor and material and the percentage which may be added as loading to such direct cost to cover the indirect expenses of manufacturing just referred to. And here let me pause to say that if any one who has hitherto not paid attention to such matters should wish to introduce more modern methods into his bookkeeping, the point to which we have arrived in our sketch is the extent to which our reforming manufacturer should at first go in his new plans. For it cannot be too often repeated that a cost system by details cannot be had unless the general books are first arranged to that end, so that all the proper charges to cost of manufacturing are decided upon and grouped. If the general system is well designed it will be easy at any time to get up additional subsidiary books, separating the expenses in any desired detail for the further information of the office. The general books must first be made to balance and the storekeeper's accounts to tally with the inventory by count before proceeding further.

#### THE REFINEMENT OF COST GETTING.

When all is ready then the next step is the ascertaining of the facts regarding each article or kind of article produced and sold. While complicated oftentimes in practice and not easy always to work out in the shop, the principle is simple; it consists by cards or slips in charging to a particular order (usually designated by a number) the material used and the direct labor spent on that order. The usual course is for the manager or superintendent to decide that a number of articles of a selected kind shall next be made up either on customers' orders or for a future market; he then signs an order to that effect, whereupon a requisition is made on the storekeeper for the amount of material or materials needed. The amount of material used and the exact number of hours worked in factory A on that numbered order are kept track of in that

factory. Formerly the workingmen themselves kept their own tally; now in busy factories it often pays to have a shop clerk who can keep account of all such records, turning his reports in to the main office for entry on a cost order book. The shop clerk is also a relief to the foreman, who can then give his entire attention to the quality of the work done in his shop and keep such watch on the orders going through that when one order is finished he can have another order ready for that mechanic. Factory B and factory C can send in similar reports, and so can the room for assembly of the parts. When a product must go through several factories, each adding something to it, the same procedure may be observed, each factory reporting only its own use of labor and new material, leaving the main office to make up the statement of total cost as before; or a debit and credit labor and material account between the factories may be established, but the objection to this is that it adds to the amount of bookkeeping without adding anything to the store of real information. In the main office care of course should be taken that the total material reported as issued by the storekeeper and the total productive labor as shown by the general books be made to agree with the shop reports, or that the difference be accounted for. We already know the percentage of loading or indirect expense, and this general percentage figured on the labor cost of that particular order and added to the labor and material already known gives roughly the manufacturing cost of that order.

#### THE RECORD OF SALES.

I have left the record of sales until now. A suggestion here is that duplicate bills or invoices be made in carbon, a convenient way being to make out a number of such bills at one sitting by using the flat or book kind of type-writing machine. These duplicate invoices or bills are compared with the charge to the customer first, then turned over to the sales clerk, who can keep the statistics of sales in any number of books or in any number of columns, showing sales first by factories and then subdivided into sales by kinds or groups, these latter statistics to be kept or changed from time to time, in accordance with the desire of the management for information and to make the records of sales conform in detail to the records of cost, thus showing the manufacturing gain or loss by articles or groups in each factory.

#### EXPENSES, GENERAL AND SELLING.

Then comes consideration of the general and selling expenses; these may be kept in detail by columns and charged directly to special articles when proper. It is my opinion that these expenses should generally be distributed over the product according to value of that product, if possible. Of course no one would consider a group of products as profitable unless all such expenses were added in fixing the price, but many cases arise where for special reasons or on a special article the manufacturer is willing to accept but a small return over manufacturing cost; the two classes of expenditure should therefore be considered separately. In like manner the proportion of interest on bonds or borrowed money or dividends on preferred stock or interest on partners' capital can be ascertained for statistical purposes for each group of products, just as the railways keep their ton mile statistics for one purpose and the cost of moving trains for another. In this way the policy of reducing prices to increase output and similar questions can be considered from the statistical standpoint. Such exhibits show what class of products is the most profitable and wherein any unusual expense may appear, giving the officers a valuable hint where to look in reducing cost.

#### DISCUSSION AND EDUCATION.

Allow me in conclusion to hope that through this convention and similar bodies there may be started a campaign of discussion which may result in a campaign of education, regarding the real cost of manufactured articles and the loss finally incurred in selling below that cost. It may be that this result can be achieved best through consolidations, such combinations, if forced by circumstances, to be made by business men on an equitable basis, and not for the mere manufacture of bonds and shares. But in any case, in some form of union there is not only strength but knowledge and safety.

#### SYNDICATE BUYERS' LISTS.

THE following admirable paper by Wallace L. Pond of the Nicholson File Company, Providence, R. I., was prepared at the request of the Southern Hardware Jobbers' Association, but on account of the superabundance of papers and addresses there was not an opportunity for it to be read at the meeting. In view of the interest of the subject of which it treats we take pleasure in laying it in full before our readers.

*Shall manufacturers sell direct or through agents or brokers to a dealer whose name has been dropped from the list of syndicate buyers as not being a legitimate jobber?*

The question put forward for our consideration at this time leads us naturally to ask:

*First.*—Who is the authority for the list of syndicate buyers? Does this association or some similar body of men make up such lists, or are they made up by some self constituted authority, whose selections may or may not be safeguarded by proper checks, or based on facts and figures as to the evidence entitling each of them to membership in the syndicate.

One is led to believe that it must be some such authority as last named, or there would be no need of such wholesale weeding out as the question under discussion would suggest. For we are loath to believe that any occasional dropping of a member from such a syndicate could incite a question of this kind for the consideration of this body at a time when so many questions of large scope and importance might be profitably discussed. The question also presents itself at once.

#### WHO IS A LEGITIMATE JOBBER?

What are the qualifications of one of that class, and by whom are these qualifications framed? Is it a generally recognized authority, or not? The manufacturer cannot, of course, be brought to task in a matter touching his dealings with one who in his judgment is a jobber, and as such entitled to direct dealings on that basis, until he has been convinced, by some one having power and proof, that he has erred in his judgment and without warrant placed this customer on the same basis as *bona fide* jobbers of unquestioned standing. And, too, before complaint can be made to the manufacturer, it would seem that some sort of official notice should be sent him stating that Mr. So and So has been found ineligible to the title previously allowed him and has been dropped from the syndicate lists. The reasons should, of course, accompany the document.

But again: Let us consider how just is any cause for complaint which you may have against the manufacturer.

In the first place, to have at the start been admitted into the ranks of other "legitimate jobbers" or a syndicate made up of such, your rejected member must have shown reasons, good and sufficient, why he should be so admitted. He must, in the nature of the case, have been able to show a volume of business large enough and carried on in such a manner as to place him in the class to which he was received. And you must concede that he is a jobber, his business is at least largely wholesale, and he is considered by his customer as a wholesale distributor of merchandise. He comes into direct competition with the most decided jobbers, and is in position to command relatively as large a business as they. Why then should not the manufacturer treat with him direct, if these be the facts of the case?

And then, too, one who has once been a member of a syndicate of this sort and thereby has derived the benefits, if any, accruing from such membership is, of course, familiar with prices given to the syndicate members, and naturally he will never consent to purchase his goods from another jobber at higher prices than he is confident would have been received by him as a member of the syndicate to which he once belonged.

You can readily appreciate how strongly the discarded member would object to being forced thus to obtain his goods from another jobber.

You certainly would not restrict the manufacturer and have him confine his dealings to only syndicate jobbers, or to those jobbers whose volume of business is greater than that of any syndicate member. And this leads to the question,

FOR WHAT IS THE SYNDICATE FORMED?

Is it not to obtain by this means, for its members collectively, a better price on any and all classes of goods than any single member of the syndicate would be entitled to for his legitimate business? Or, in fact, the object is, as we understand it, to place your syndicate members, if possible, on a level with the largest jobbers in the country, whose volume of trade they cannot hope to attain. Granting this to be so, we are confronted with numerous complaints, the most important being from the large jobbers, who say that the manufacturer has no right to make to a collection of houses buying as a body, or through one head, prices lower than are due to any single member for the trade controlled by him, and you will, we think, agree with us that this complaint is more likely to be considered right and just than is any complaint which might be made against a manufacturer for selling to a possible member of such a syndicate for the reason, as the question puts it, that he is not a "legitimate jobber."

AN INDEPENDENT COURSE FOR MANUFACTURERS.

After all, gentlemen, is it not the safest and best for the manufacturer to pursue an independent course touching such dealings, coming as near to an equitable or fair treatment of all concerned as he possibly can, but reserving to himself the right to be his own judge as to whom he will sell?

The manufacturer will be governed in all such matters by his own sense of fairness and right dealings, and while the desire to sell is oftentimes hard to resist, all of us must be judged by the general character of our dealings and not by any occasional mistake which the best of us sometimes will make.

The self interest of the manufacturer will prevent him from straying too far from the path of equity and fairness.

CHICAGO RETAIL HARDWARE ASSOCIATION  
PICNIC.

THE ninth annual picnic of the Chicago Retail Hardware Association was held under auspicious circumstances on July 15 at Northwestern Park, 17 miles from Chicago on the Des Plaines River, between 750 and 800 persons being present. The grove was in fine condition and the day was superb. An elaborate entertainment programme had been arranged by the Games Committee, of which W. T. Gormley was chairman. The result of the various contests follows:

COUPON DRAWING PRIZES: First prize, Mrs. Schaefer; set of four Saws in case, donated by Geo. H. Bishop & Co. Second prize, not drawn: Refrigerator, donated by Ranney Refrigerator Company. Third prize, E. P. Quinlan; Lamp, donated by Standard Oil Company. Fourth prize, John Miller; Flour Bin and Sifter, donated by National Enameling & Stamping Company. Fifth prize, Mrs. Rascher; Gas Stove, donated by G. M. Clark Company. Sixth prize, Mrs. Waller; Ten-foot Wool Bunting Flag, donated by H. Cannon Company. Seventh prize, not drawn: Savoy Coffee Roaster, donated by C. Sidney Shepard Company. Eighth prize, not drawn: special, donated by Chicago Hardware Company. Ninth prize, R. M. Rusco; Oil Heater, donated by Barler Mfg. Company. Tenth prize, J. H. Hammell; Umbrella Clothes Rack, donated by Mart-Cross Company.

TARGET SHOOTING CONTEST (members only): First prize, Tony Englehardt; 22-cal. Rifle, donated by Wells & Nellegar Company. Second prize, C. Dahlstrom; Screw Case, donated by J. D. Warren Mfg. Company. Third prize, J. Bartholdi; Oil Heater, donated by Standard Lighting Company. Fourth prize, Geo. A. Englehardt; Large Oven, Drop Door, donated by Linderman-Hoverson Company.

SHOOTING CONTEST (members): First prize, C. W. Neisel; one making most center shots, fancy Shaving Set, donated by J. E. Miller & Co. Second prize, H. E. Gnadt; one making next best score center shots, 50 feet Hose, Reel and Nozzle, donated by N. Y. Belting & Rubber Company.

TARGET SHOOTING CONTEST (open): First prize, Geo. McDougal; special, donated by Sargent & Co. Second prize, A. Gutgesell; Wringer, donated by Wallis, Robinson & Co. Third prize, L. M. Perrigo; Hammock, donated by L. Gould & Co. Fourth prize, J. H. Hammill; Adjustable Iron Smooth Plane, donated by Ohio Tool Company.

FIFTY-YARD DASH (members only): First prize, H. E. Clutterham; Saw, donated by E. C. Atkins & Co. Second prize, H. O. McClure; Saw, donated by E. C. Atkins & Co. Third prize, J. Bartholdi; bale Wire Netting, donated by Gilbert & Bennett Mfg. Company. Fourth prize, F. H. Schanze; two pairs Tinnings' Snips, donated by S. L. Perkins Company.

Egg Race (married women): First prize, Mrs. John Dasso; set Tea and Coffee Pots, donated by Hibbard, Spencer, Bartlett & Co. Second prize, Mrs. W. C. Kerstaun; Household Mangle, donated by American Wringer Company. Third prize, Mrs. G. A. Ernst; Food Chopper, donated by C. D. Woodruff. Fourth prize, Mrs. A. A. Denny; Rust Proof Boiler, donated by Rochester Stamping Company.

FIFTY-YARD DASH (for ladies): First prize, Lulu Scheehan; Chafing Dish, donated by Orr & Lockett Hardware Company. Second prize, Eva Englehardt; fancy Baking Dish, donated by Rochester Stamping Company. Third prize, Lulu Cook; Coffee Pot, donated by Jacob J. Volrath Mfg. Company. Fourth prize, Flora Olson; Kettle, donated by Jacob J. Volrath Mfg. Company.

HOPPING RACE (for girls): First prize, Katie McKeown; a Chatelaine Watch, donated by *The Iron Age*. Second prize, Gladys Guideman; Crystal Coffee Mill, donated by A. T. Stewart & Co. Third prize, Mamie Gleger; pair Shears, donated by Robeson Cutlery Company.

SPECIAL PRIZE FOR MEN'S GUESSING CONTEST: John C. Dasso; Silk Umbrella, donated by the *American Artisan*.

SPECIAL PRIZE FOR WOMEN'S GUESSING CONTEST: Mrs. Dolly Gustuson; Cut Glass Salad Bowl, donated by the *American Artisan*.

FIFTY-YARD DASH (married women under 26 years): First prize, Mrs. Lizzie Bender; Rotary Washer, donated by Samuel Cupples Woodenware Company. Second prize, Mrs. Haines; set Ober Sad Irons, donated by A. T. Stewart & Co. Third prize, Mrs. Bofinger; Tea Kettle, donated by Jacob J. Volrath Mfg. Company. Fourth prize, Mrs. Seers; Rice Boiler, donated by Jacob J. Volrath Mfg. Company. Fifth prize, Mrs. E. Stein; Preserving Kettle, donated by Jacob J. Volrath Mfg. Company.

BAG RACE (for boys): First prize, E. Griebel; special, donated by Wilcox Mfg. Company. Second prize, John Morris; Pocket Knife, donated by Dennis McLaughlin. Third prize, Elmer Lukowitz; Coffee Roaster, donated by C. Sidney Shepard Company.

TWENTY-YARD DASH (for children four years and under): First prize, Gracie Stellerman; Gold Ring, donated by *The Metal Worker*. Second prize, Edna Middlestead; Cake Closet, donated by C. Sidney Shepard Company. Third prize, Edward Kuny; Coffee Roaster, donated by C. Sidney Shepard Company.

TUG OF WAR (teams of six, members only): A White Handled Razor was presented to each member of the winning team by Bullard & Gormley Company; the Chicago Hardware Company presented each of the losers with a prize.

THREE-LEGGED RACE (open): First prize, C. Ellis and A. Brauner; special, donated by Reading Hardware Company. Second prize, A. Mowitz and Hugo Sueter; special, donated by Estate P. D. Beckwith. Third prize, Frank Kellogg and R. V. Schwartz; special, donated by H. H. Hopkins.

ROLLING RACE, arms tied (open): First prize, Ed. Hanson; Water Cooler, donated by National Enameling & Stamping Company. Second prize, Alvin Minnick; Pocket Knife, donated by Robeson Cutlery Company. Third prize, Stewart Smithson; pair of N. P. Trimmers, donated by Compton Shear Company.

BASEBALL (members only): Razor to each of the winning nine and umpire, donated by Trout Hardware Company.

BASEBALL (open): Pocket Knife to each of the winning nine and umpire, donated by Hibbard, Spencer, Bartlett & Co.

BALD HEADED RACE (members): First prize, Geo. Bartholdi; special, donated by P. & F. Corbin. Second prize, Fred Ruhling; special, donated by Russell & Erwin Mfg. Company. Third prize, Martin Englehardt; Water Cooler, donated by C. Sidney Shepard Company. Fourth prize, M. Belersdorff; Three-Burner Hot Plate, donated by A. J. Linderman-Hoverson Company. Fifth prize, W. Lindberg; Door Hanger, donated by Allith Mfg. Company.

FIFTY-YARD DASH (for girls under 16 years): First prize, Clara Heinz; fancy Lamp, donated by B. A. Wherry Company. Second prize, Lizzie Gunther; Cake Closet, donated by C. Sidney Shepard Company. Third prize, Hazel Schafer; Roaster, donated by C. Sidney Shepard Company.

TWENTY-FIVE-YARD BACKWARD RUN (open): First prize, Chas. Englehardt; special, donated by Allerton-Clarke Company. Second prize, C. Hagerup; special, donated by Rothschild, Meyer & Co. Third prize, A. Martin; special, donated by Brand Stove Company.

BLINDFOLDED RACE (open): First prize, F. M. Desnoyer; Lamp, donated by Standard Oil Company. Second prize, H. W. Beegle; special, donated by Lawson Mfg. Company. Third prize, C. G. Newell; Tea Pot, donated by Jacob J. Volrath Mfg. Company.

SPECIAL RACE (men under 35 years): First prize, J. P. Fletcher; money "Jack pot." Second prize, Geo. Ruhling; money "Jack pot." Third prize, R. C. Cook; donated by the Simonds Mfg. Company.

The judges on contests were: H. H. Roberts, J. D. Warren, D. W. Simpson, J. O. Becroft and Sidney Johnson; referees: Z. T. Miller and John E. Harbster.

One of the interesting features of the picnic was the presentation of a beautifully engraved gold headed cane to W. H. Bennett, manager of the Reading Hardware Company, Chicago. The cane was presented by D. W. Simpson, president of the Wilcox Mfg. Company, Aurora, Ill., on behalf of the Chicago Retail Hardware Association. Mr. Bennett, while evidently taken by surprise, responded briefly, paying tribute to the Chicago Association as the Mother of Retail Hardware Associations in the United States, and referred to the interest he had always taken in the association as being prompted by his desire for the betterment for trade conditions, which he said could be brought about by the organization of such associations.

C. PLATT'S SONS, Eldred, Pa., manufacturers of Pocket Cutlery, have just incorporated under the State laws of Pennsylvania.

# THE SARATOGA CONVENTIONS.

## Southern Hardware Jobbers' Association.

## American Hardware Manufacturers' Association.

### CONCLUDING REPORT.

THOSE in charge of the programme of the joint meeting at Saratoga are to be congratulated on the success with which the business programme was carried out. With scarcely an exception the papers arranged for were presented, and, indeed, the amount of matter thus brought to the attention of the meetings was such as to leave little opportunity for more detailed discussion. The papers, too, were of exceptional interest and justify careful perusal, touching as many of them do upon important trade questions. The attendance of the Southern merchants was smaller than at recent conventions, owing probably to the fact that business is opening up in Southern territory, making it less convenient for the merchants



to attend than if the convention had been held at the usual date. The distance, too, probably militated somewhat against the attendance.

#### Excursions and Entertainment.

The reception committees of the Southern Association and of the Manufacturers' Association worked in harmony under the efficient leadership of Irby Bennett, whose large and thoroughly representative committee was active in looking after the entertainment of the delegates and did much to make the gathering successful. The carriage drive on Wednesday afternoon gave the visitors an opportunity to see the village of Saratoga and its vicinity. The excursion on Thursday to Lake George, to which practically the entire day was devoted, gave the delegates a wider outlook, which was greatly enjoyed. On Friday a large delegation visited Hoosick Falls as the guests of the Walter A. Wood Mowing & Reaping Machine Company, whose large establishment was opened for their inspection, where an abundant lunch was provided for their comfort. The festivities of the convention were concluded by the banquet in the Grand Union Hotel, to which reference is made below.

#### Convention Committees.

President Heitmann appointed the following committees to act during the convention:

**AUDITING COMMITTEE:** C. E. Thomas, T. W. Gathright, E. A. Peden  
**RESOLUTIONS COMMITTEE:** W. M. Crumley, Fred. Fox, F. B. Dunlop.  
**MEMORIAL COMMITTEE:** John Donnan, Geo. J. May, W. J. Griffin.  
**NOMINATING COMMITTEE:** O. B. Barker, G. W. Barnett, J. J. Mandlebaum.

#### Manufacturing Accounting and Costs.

A very interesting and instructive paper, entitled "Manufacturing Accounting and Costs," was read by Thomas L. Greene, vice-president of the Audit Company of New York, at an executive session of the Manufacturers' Association on Thursday morning. This paper is given under the head of "Hardware Factory Cost Methods" in another part of this issue.

#### New Members.

The secretary reported the following accessions to the membership during the year:

Barney-Cavanaugh Hardware Company, Mobile, Ala.  
 Ben. J. Schuster, Selma, Ala.  
 Lee Richardson & Co., Vicksburg, Miss.  
 Benedict, Warren & Davidson Company, Memphis Tenn.  
 Peden Iron & Steel Company, Houston, Texas.  
 Richmond Hardware Company, Richmond, Va.

#### Resolutions.

The Committee on Resolutions made the following report, which was unanimously adopted:

*Resolved*, That the thanks of this association be tendered to F. A. Heitmann for his devotion to us while president of our body;

*Resolved*, That the thanks of this association be tendered to the Rev. Joseph Carey of the village of Saratoga for his courtesy in opening the session of the con-



W. M. CRUMLEY.

vention with prayer; also to A. P. Knapp, the president of the village of Saratoga Springs, for his warm welcome of the association to the Springs.

*Resolved*, That our colossal sergeant-at-arms, H. H. Beers, is deserving of the highest commendation for the fearless manner in which he has performed the duties of his dangerous position.

*Resolved*, That our Entertainment Committee, headed by Irby Bennett, deserves and has the thanks of this association for its untiring effort, night and day, to make every moment of our time one of pleasure.

*Resolved*, That Messrs. Woolley and Gerrans be tendered the thanks of this association for the grand service they have rendered us while guests of their magnificent hotel.

*Resolved*, That the presence of the heads of the Hardware trade press is appreciated, and that we tender them our thanks for the space they always give us in their valuable publications.

*Resolved*, That the ladies be thanked for their presence, and that we urge all our members to bring their wives and daughters to our future meetings, thereby adding to the pleasure of our convention.

**Report of Memorial Committee.**

The Memorial Committee, consisting of John Donnan, W. J. Griffin and George J. May, reported as follows:

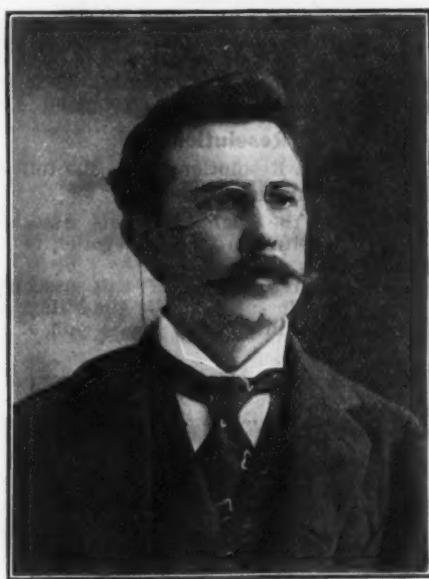
It is with deep regret that this committee has to report three deaths among the members of the Southern Hardware Jobbers' Association since its last meeting.

S. B. HUBBARD.

S. B. Hubbard of the S. B. Hubbard Hardware Company, Jacksonville, Fla., was suddenly stricken in his sixty-third year while in perfect health, in the midst of his busy career. He was a public spirited man, universally beloved, admired and well spoken of by all who knew him. An energetic and prominent citizen, he held many stations of importance in Jacksonville, among them the presidency of one of his city's banks and street railway companies. About his thirtieth year he moved from North Carolina, and was one of the first men to engage in the Hardware business in the city in which he died. We cannot pass from his name without laying on his tomb a wreath of esteem to his memory.

W. A. PLEASANTS.

Death again stole into our ranks and erased from our membership roll the honored name of W. A. Pleasants of the W. A. Pleasants Hardware Co. of Shreveport, La.



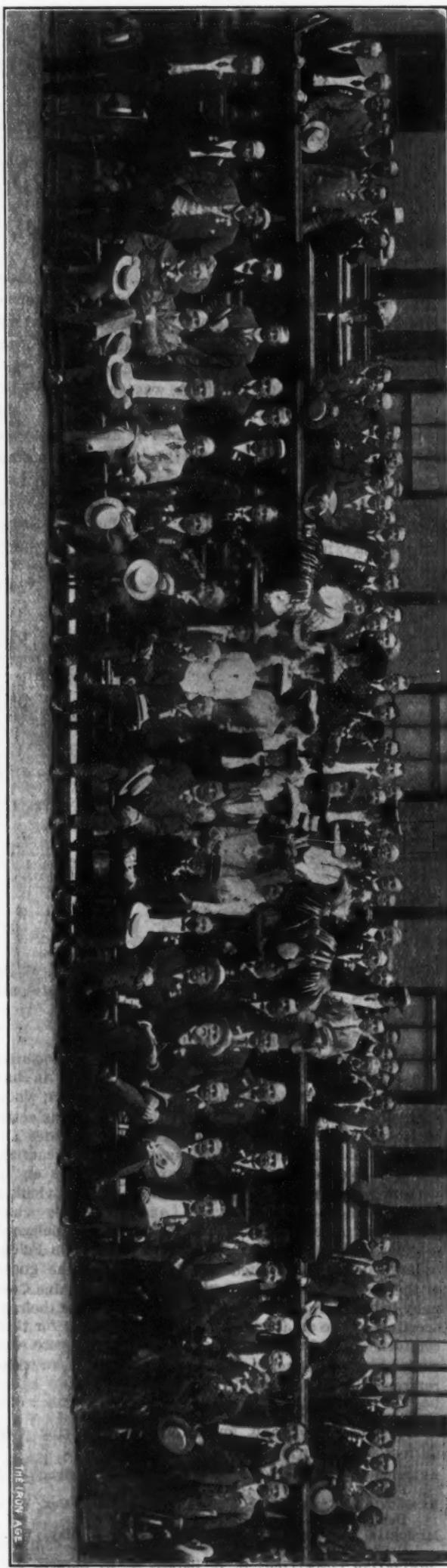
C. B. CARTER.

He was born in Richmond about 60 years ago. While still quite young he entered the Confederate service as a member of the Richmond Howitzers, serving with honor and distinction throughout the war. It is related that he narrowly escaped death at Gettysburg by the first shot fired in the battle, which struck his cannon, killing five men by his side. He lived a very busy life until sickness undermined his health a few years ago, since which time he gradually failed until death claimed him. A man of sterling integrity and honesty, he was admired and beloved by all who knew him.

JAMES A. FONES.

We have to record the death of another member of our association—James A. Fones of the Fones Bros. Hardware Company, Little Rock, Ark. He died in July of last year, in his sixty-third year. His life was full of charity and kindness for his fellow men. He was a member of the Presbyterian Church, and he took great interest in its work. He passed his early life in his native State—Georgia. In 1863 he came to Arkansas, and went into the Hardware business after a few years' service in the Confederate Army. One of Little Rock's most prominent citizens, he was deeply interested and active in all public matters connected with that city, and for seven years held the position of president of its Board of Trade. His devoted wife survived him only seven months. All who knew him will remember him only for his virtues, which were indeed many.

The removal from our midst of these honored members of our association fills us with profound sorrow; but as He, the Father of us all, has deemed it best to call these hence, we can only bow humbly to His will.



**Election of Officers and Next Meeting.**

The following officers were elected for the ensuing year:

PRESIDENT, W. M. CRUMLEY, Atlanta, Ga.  
FIRST VICE-PRESIDENT, JOHN DONNAN, Richmond, Va.  
SECOND VICE-PRESIDENT, E. A. PEDEN, Houston, Texas.  
C. B. Carter, Knoxville, Tenn., was reappointed secretary-treasurer.

President Crumley appointed the following Executive Committee, which action was approved by the association on vote: F. B. Dunlop, Fort Smith, Ark.; Bruce Keener, Knoxville, Tenn.; Charles H. Ireland, Greensboro, N. C.; O. B. Barker, Lynchburg, Va.

Atlanta, Ga., was chosen as the place of the next annual meeting, which is to be held between June 1 and June 15, 1904, the exact date to be fixed by the Executive Committee.

**Souvenirs.**

Many merchants who were in attendance at the convention were provided with souvenirs, which were liberally given out. Among these the following may be mentioned:

MICHIGAN STOVE COMPANY, Detroit, Mich., cigar case, matches, ash receiver, court plaster case.



F. D. MITCHELL.

CHARTER OAK STOVE & RANGE COMPANY, St. Louis, Mo., memorandum book with tables, &c.  
E. C. ATKINS & Co., Indianapolis, Ind., silver plated hat brush.  
MORE TWIST DRILL & MACHINE COMPANY, New Bedford, Mass., miniature twist drill.  
INTERNATIONAL CUTLERY COMPANY, Fremont, Ohio, pocket shears.  
MAYER & Co., Philadelphia, Pa., manicure file.  
IVER JOHNSON'S ARMS & CYCLE WORKS, Fitchburg, Mass., watch chain charm.  
THE BRONSON-WALTON COMPANY, Cleveland, Ohio, miniature model of Never-Burn pan.  
PIKE MFG. COMPANY, Pike Station, N. H., silver mounted whetstone, and souvenir box containing maple sugar, spruce gum and assortment of miniature whetstones.  
J. D. WARREN MFG. COMPANY, Chicago, Ill., leather card case with cards and Scotch coin jug bag.  
NICHOLSON FILE COMPANY, Providence, R. I., manicure file in silver case, with a copy of "File Philosophy."  
UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn., a 30-caliber United States Government cartridge Thomas bullet.  
G. & H. BARNETT COMPANY, Philadelphia, Pa., manicure file.  
BAEDER, ADAMSON & Co., Philadelphia, Pa., celluloid paper cutter.  
YALE & TOWNE MFG. COMPANY, Stamford, Conn., ash receiver.  
INDIANA CHAIN WORKS, Jeffersonville, Ind., cigar case.

**The Banquet.**

The convention closed on Friday evening with an elaborate banquet tendered by the manufacturers to the Southern Hardware Jobbers' Association and the New York State Association of Hardware Jobbers. It was held in the banqueting hall of the Grand Union Hotel, which was elegantly decorated for the occasion. The dinner, which was a complete success, was under the im-

mediate care of Fayette R. Plumb, Irby Bennett, chairman of the Entertainment Committee, and Henry B. Lupton, chairman of the Reception Committee. At the conclusion of the dinner, which was enlivened by the singing of "America," "The Star Spangled Banner" and "Dixie," Henry B. Lupton introduced Fayette R. Plumb, president of the American Hardware Manufacturers' Association,



THOMAS L. GREENE.

who presided as toastmaster, and on taking up the gavel spoke as follows:

**Mr. Plumb's Greeting.**

I am proud to have the opportunity of welcoming you to the closing festivities of a very successful meeting, and to thank you all for your presence here to-night.

The banquet held at New Orleans was made so enjoyable by the presence of the ladies that we felt this occasion would not be complete without them, and I am glad to say we were justified in our conclusion.

I therefore wish to extend to them a cordial greeting, and to express the hope that their stay at Saratoga has been so enjoyable that they will one and all be glad to attend the future meetings wherever they may be held.



H. B. LUPTON.

as their presence not only adds grace and dignity, but contributes to the success of our entertainments.

It is also most fitting to express our thanks to the proprietors of this grand old hostelry for the courtesies shown us during our stay here, and to wish them a successful season.

The most eventful 127 years of the world's history

drew to a close with the decline of the sun on July 3, 1903. The most momentous epoch in all this stretch of wonderful years was that few hours of that other Fourth of July, when 70 men in Philadelphia, representing 3,000,000 settlers in a new country, fired with a congenial instinct of liberty, spurred by oppression, pledged life, fortune and sacred honor for their independence. With this heroic act was born true freedom, the fame of which has spread over the entire world. While this country has prospered far beyond the most sanguine hope of the fathers, if the half had been told to the generation which has preceded us they would have classed us with the worst of unbalanced minds.

We are particularly proud of the success which has attended us as a nation because we feel that the members of the American Hardware Manufacturers' Association, representing the largest aggregation of capital of any business organization in the world, have played no small part in its development, as their wares are not only sold in every hamlet and village from the Atlantic to the Pacific and from Canada to the Gulf, but in every city and town of any note on the entire globe. This great work has not been accomplished by ordinary methods, but by excelling in workmanship and in methods of manufacture.

We are, therefore, not only proud of our membership,



IRBY BENNETT.

but proud of the people who compose it, and feel justified in predicting a great future for our association.

In conclusion, permit me to say that we are particularly pleased to include among our guests to-night the New York State jobbers, and to hope that they will not regret that they remained to join with their Southern friends in breaking bread with us and indulging in a friendly glass in honor of the event.

#### The Toast List.

All the speakers on the toast list, which is given below, were present and responded to the sentiments assigned them:

Introduction of Toastmaster.....H. B. LUPTON, Chairman.  
Greeting.....FAYETTE R. PLUMB.

"To thee and thy company  
I bid a hearty welcome."—*Shakespeare*.

Response for New York State Jobbers.....  
GEN. C. WHITNEY TILLINGHAST, 2D.

"Star Spangled Banner."

Victories of Peace.....GEORGE H. MAXWELL.

"Peace hath her victories

No less renowned than war's."

The Relations of Our Editors to Merchants and  
Manufacturers.....R. R. WILLIAMS.

"I choose to write things I

Durst not speak."—*Prior*.

"Dixie."

The Social Side of the Hardwaremen.....IRBY BENNETT.

"Proper words and proper places  
Make the true definition of a style."—*Swift*.

A pleasant feature of the gathering was the introduction of Isaac H. Stauffer of Stauffer, Eshelman & Co., New Orleans, who holds an honored position among Hardware merchants on account of his long connection with the trade and his personal character and worth.

The committee in charge of the dinner were the recipients of many congratulations on the admirable programme they prepared and the manner in which it was carried out. The occasion was a fitting conclusion to a most enjoyable gathering.

#### The Attendance.

The representation of the jobbing trade was strengthened by the fact that the New York State Association of Jobbers held their midsummer meeting in Saratoga on Thursday, thus bringing to the gathering a number of well-known merchants. The preponderance of the manufacturers and their representatives, as is usual at such conventions, was, however, noticeable. The trade will note with interest the group picture presented herewith, in which many of those in attendance appear. The following persons were present, according to the official register:

Geo. H. Sargent, Sargent & Co., New York.  
Chas. M. Jarvis, P. & F. Corbin, New Britain, Conn.  
E. B. Pike, Pike Mfg. Company, Pike Station, N. H.  
F. S. Kretzinger, American Fork & Hoe Company, Cleveland.  
Fayette R. Plumb, Fayette R. Plumb, Incorporated, Philadelphia.  
Geo. P. Hart, Stanley Works, New Britain, Conn.  
F. I. Johnson, Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.  
Hon. D. H. Goodell, Goodell Company, Antrim, N. H.  
N. A. Gladding, E. C. Atkins & Co., Indianapolis, Ind.  
Wm. G. Smythe, American Screw Company, Providence, R. I.  
G. M. Landers, Landers, Frary & Clark, New Britain, Conn.  
Jas. P. Kelly, Kelly Axe Mfg. Company, Alexandria, Ind.  
Jos. J. McCaffrey, McCaffrey File Company, Philadelphia.  
Oliver Williams, Bryden Horse Shoe Company, Catasauqua, Pa.  
B. A. Hawley, Russell & Erwin Mfg. Company, New Britain, Conn.  
Henry B. Lupton, Oliver Iron & Steel Company, Pittsburgh.  
C. W. Asbury, Enterprise Mfg. Company, Philadelphia.  
T. E. Oliver, Oliver Bros., New York.  
Fred. S. Merritt, Standard Horse Nail Company, New Brighton, Pa.  
T. B. Coles, American Steel & Wire Company, New York.  
R. K. Carter, R. K. Carter & Co., New York.  
W. P. Smith, Mead & Smith, Rogersville, Tenn.  
J. T. Quarles, Lamson & Goodnow Mfg. Company, New York.  
Wm. H. Cole, Tower & Lyon Company, New York.  
Wm. B. Herrick, Harrison Bros., New York.  
A. R. Sullivan, Towers & Sullivan Mfg. Company, Rome, Ga.  
H. A. Deane, Towers & Sullivan Mfg. Company, Rome, Ga.  
F. S. Sealey, Wlebusch & Hilger, Limited, New York.  
T. Jas. Fernley, Philadelphia.  
J. W. Lyon, P. & F. Corbin, Philadelphia, Pa.  
Geo. W. Corbin, Corbin Cabinet Lock Company, New Britain, Conn.  
J. J. Teeple, F. R. Plumb, Incorporated, Philadelphia, Pa.  
C. S. Forsyth, Meriden Cutlery Company, Meriden, Conn.  
W. J. Griffin, Griffin Hardware Company, Rome, Ga.  
W. L. Humason, Humason & Beckley Mfg. Company, New Britain, Conn.  
John S. Sanders, Union Metallic Cartridge Company, Atlanta, Ga.  
Edward Ingalls, Atha Tool Company, Newark, N. J.  
George Reuter, Jr., American Wringer Company, New York.  
J. T. Powell, Stanley Rule & Level Company, New Britain, Conn.  
C. K. Woodburne, Warren McArthur, Chicago, Ill.  
Wm. A. Corry, J. C. McCarty & Co., Covington, Ky.  
A. W. Bond, Goodell Company, Baltimore, Md.  
E. G. Buckwell, Cleveland Twist Drill Company, Cleveland.  
J. D. Parrott, Yale & Towne Mfg. Company, Nashville, Tenn.  
Arthur S. Jones, Indiana Chain Works, Memphis, Tenn.  
John P. Gately, Troy Nickel Works, Albany, N. Y.  
H. B. Plumb, Eagle Lock Company, New York.  
C. W. Plumb, Eagle Lock Company, Caryville, Ky.  
O. L. Davis, Smith Bros. Hardware Company, Columbus, Ohio.  
S. L. Martin, Standard Horse Shoe Company, Boston, Mass.  
J. R. Gilfillan, Belfont Iron Works Company, Ironton, Ohio.  
Chas. H. Wier, Wier & Wilson, Baltimore, Md.  
R. E. Wier, Wier Bros., Baltimore, Md.  
J. J. Alvord, Atlas Shear Company, Bridgeport, Conn.  
G. F. Salisbury, Iver Johnson's Arms & Cycle Works, Boston, Mass.  
J. D. Reader, Clauss Shear Company, Clyde, Ohio.  
W. H. Pipp, Columbian Enameling & Stamping Company, Terre Haute, Ind.  
Wm. P. Paulscraft, R. K. Carter & Co., Pittsburgh, Pa.  
H. W. Knox, Ashcroft Mfg. Company, New York.  
Fred. Fox, Fox Bros. Hardware Company, Pine Bluff, Ark.  
J. N. Durby, Hancock Inspirator Company, New York.  
Alfred C. Greening, R. K. Carter & Co., New York.  
J. R. Lynn, Max Klass, New York.  
Wm. Taylor, Pittsburgh Steel Company, Louisville, Ky.

G. Moore, Walter A. Wood Mowing & Reaping Machine Company, Hoosick Falls, N. Y.

C. G. Ely, Trimont Mfg. Company, Roxbury, Mass.

Chas. B. Lee, Hopkins & Allen Arms Company, Norwich, Conn.

W. B. Jackson, Athens Hardware Company, Athens, Ga.

Lewis B. Beers, New Jersey Wire Cloth Company, Trenton, N. J.

T. P. Dunlop, Speer Hardware Company, Ft. Smith, Ark.

W. W. Crandall, W. W. Crandall & Co., Nashville, Tenn.

Geo. L. Corbin, Corbin Cabinet Lock Company, New Britain, Conn.

Harry Mayer, Mayer & Co., Philadelphia, Pa.

M. Gaudrey, Pike Mfg. Company, New York.

B. M. Gladding, E. C. Atkins & Co., Memphis, Tenn.

T. W. Gathright, E. C. Atkins & Co., Atlanta, Ga.

Geo. W. Trout, Trout Hardware Company, Chicago, Ill.

Thomas W. Trout, Trout Hardware Company, Chicago, Ill.

E. E. Payne, B. F. Avery & Sons, Louisville, Ky.

A. L. Mackay, Corbin Cabinet Lock Company, Meriden, Conn.

T. H. Keeler, Peters Cartridge Company, New York.

T. H. Keeler, Jr., Peters Cartridge Company, New York.

Geo. R. Benjamin Peters Cartridge Company, New York.

Geo. L. Haven, P. & F. Corbin, Atlanta, Ga.

R. P. Boyd, John H. Graham & Co., New York.

W. A. Graham, John H. Graham & Co., New York.

T. H. Gossett, Peck, Stow & Wilcox Company, New York.

F. L. Wilcox, Peck, Stow & Wilcox Company, Berlin, Conn.

A. B. Bronson, Bronson-Walton Company, Cleveland, Ohio.

Edw. A. Walton, Bronson-Walton Company, Cleveland, Ohio.

E. A. Peden, Peden Iron & Steel Company, Houston, Texas.

John R. Scott, Carnegie Steel Company, New Orleans.

R. R. Williams, *The Iron Age*, New York.

J. D. Warren, J. D. Warren Mfg. Company, Chicago, Ill.

E. D. Perry, Hopkins & Allen Arms Company, Norwich, Conn.

Paul R. Howard, Paul R. Howard Hardware Company, Norfolk, Va.

E. H. Vordenbaumen, Vordenbaumen-Eastham Company, Shreveport, La.

F. C. Tuttle, Peters Cartridge Company, Cincinnati, Ohio.

J. T. French, Peters Cartridge Company, Cincinnati, Ohio.

D. A. Shnebel, John Chapman & Sons, New York.

A. W. Connor, Savage Arms Company, Utica, N. Y.

A. F. Corbin, Corbin Cabinet Lock Company, New Britain, Conn.

F. S. Davidson, Davidson Mfg. Company, New York.

Chas. G. Hill, Baeder, Adamson & Co., New York.

Ernest S. Cox, Hardware Jobbers' Purchasing Company, New York.

J. H. Grubb, Hussey, Binns & Co., Philadelphia, Pa.

M. Hirsch, American Cutlery Company, Chicago, Ill.

John Donnan, W. S. Donnan Hardware Company, Richmond, Va.

H. L. Knight, Knight & Hall Company, Tampa, Fla.

I. S. Craft, Knight & Hall Company, Tampa, Fla.

Harry G. Harvey, National Supply Company, Baltimore, Md.

Harold Harvey, National Supply Company, Baltimore, Md.

Geo. F. Baker, Nicholson File Company, Providence, R. I.

Wallace L. Pond, Nicholson File Company, Providence, R. I.

W. M. Crumley, Beck & Gregg Hardware Company, Atlanta, Ga.

C. M. Fouche, Crucible Steel Company of America, Chattanooga, Tenn.

C. B. Parsons, P. & F. Corbin, New Britain, Conn.

Geo. J. May, P. F. May & Co., Washington, D. C.

H. R. Miller, Thomas, Barnes & Miller, Memphis, Tenn.

Thomas Ellis, Iver Johnson's Arms & Cycle Works, New York.

W. A. Shepard, Iver Johnson's Arms & Cycle Works, New York.

Joseph E. Reinart, Wachter Mfg. Company, Baltimore, Md.

John Hoen, Henry Keldel & Co., Baltimore, Md.

A. W. Stanley, Stanley Rule & Level Company, New Britain, Conn.

R. N. Peck, Stanley Rule & Level Company, New Britain, Conn.

F. H. Thompson, Stanley Rule & Level Company, New York.

Joseph M. Hottel, G. & H. Barnett Company, Philadelphia, Pa.

S. R. G. Sykes, Sykes Steel Company, Chicago, Ill.

Fred. E. Sands, Trimont Mfg. Company, Roxbury, Mass.

G. K. Simonds, Simonds Mfg. Company, Fitchburg, Mass.

B. F. Hayner, Rome Hardware Company, Rome, Ga.

J. C. Sproull, Anniston Hardware Company, Anniston, Ala.

D. P. Hale, Standard Wheel Company, Sandersville, Ga.

R. L. Young, Michigan Stove Company, Detroit, Mich.

Irby Bennett, Winchester Arms Company, Memphis, Tenn.

F. A. Heitmann, F. W. Heitmann Hardware Company, Houston, Texas.

Sam'l. Hallman, Anniston Hardware Company, Anniston, Ala.

F. P. Mitchell, Standard Chain Company, Pittsburgh, Pa.

H. H. Beers, Beers & Mitchell, Richmond, Va.

S. C. Dunn, Voorhees Rubber Mfg. Company, Jersey City, N. J.

Geo. T. Curtiss, Simonds Mfg. Company, Fitchburg, Mass.

Buck Williams, Atkinson-Williams Hardware Company, Ft. Smith, Ark.

B. P. Atkinson, Atkinson-Williams Hardware Company, Ft. Smith, Ark.

J. E. Kelly, Simonds Mfg. Company, Fitchburg, Mass.

Hobart Weed, Weed & Co., Buffalo, N. Y.

Geo. G. Linen, Buffalo Scale Company, Buffalo, N. Y.

Howard S. Hart, Russell & Erwin Mfg. Company, New Britain, Conn.

Edwin H. Brooks, American Tin Plate Company, New York.

H. E. Barton, Wallingford Mfg. Company, Wallingford, Vt.

H. C. Holt, Lamson & Sessions Company, Cleveland, Ohio.

A. E. Bolles, *Hardware*, New York.

Henry L. Geissell, *Hardware*, New York.

O. B. Barker, Barker-Jennings Hardware Company, Lynchburg, Va.

H. W. Caldwell, Cleveland Stove Company, Cleveland, Ohio.

Jas. J. Mandlebaum, Fones Bros. Hardware Company, Little Rock, Ark.

F. H. Foreman, Pittsburgh Steel Company, Pittsburgh, Pa.

James N. Stanley, Landers, Frary & Clark, New Britain, Conn.

Daniel Stern, *American Artisan*, Chicago, Ill.

E. A. Kellogg, Stevenson Mfg. Company, Albany, N. Y.

A. D. Byrne, General Chemical Company, Brooklyn, N. Y.

Henry A. Hurling, Goodell Company, Antrim, N. H.

W. C. Davenport, W. H. Davenport Fire Arms Company, Norwich, Conn.

C. M. King, McKinney Mfg. Company, Allegheny, Pa.

C. F. Weller, Cortland Corundum Wheel Company, Cortland, N. Y.

J. T. Corbett, Hayden-Corbett Chain Company, Columbus, Ohio.

J. C. Griffin, Griffin Mfg. Company, Erie, Pa.

B. F. Hadley, Continental Tool Company, Frankfort, N. Y.

A. Dinklespiel, *American Artisan*, New York.

J. P. Cole, Biddle Purchasing Company, Pittsburgh, Pa.

W. H. Stanton, Biddle Purchasing Company, New York.

J. A. Holmes, John Russell Cutlery Company, Turner's Falls, Mass.

Paul E. Heller, Heller Bros. Company, Newark, N. J.

H. S. Demorest, Greene, Tweed & Co., New York.

F. W. Huggins, Landers, Frary & Clark, New Britain, Conn.

S. P. Luttrell, S. B. Luttrell & Co., Knoxville, Tenn.

E. H. Martin, Carnegie Steel Company, Pittsburgh, Pa.

J. C. Bering, Bering & Cortes Hardware Company, Houston, Texas.

D. A. Merriman, American Steel & Wire Company, Chicago, Ill.

T. G. Ewing, Paden-Ewing Hardware Company, Gadsden, Ala.

F. S. Colvin, Irwin Auger Bit Company, Wilmington, Ohio.

C. M. Treat, Buffalo, N. Y.

II. A. Curtiss, Meriden Cutlery Company, Meriden, Conn.

C. B. Carter, Knoxville, Tenn.

W. O. Connor, Griffin Hardware Company, Rome, Ga.

E. Warren Smith, Pike Mfg. Company, Pike Station, N. H.

W. P. Penfield, Hamilton Rifle Company, Plymouth, Mich.

John O. Manson, John O. Manson & Co., Burlington, Vt.

Geo. E. Eddy, Henry Keldel & Co., Baltimore, Md.

H. B. Barden, Wallingford Mfg. Company, Wallingford, Vt.

Dan K. Stucki, White Mountain Freezer Company, Buffalo, N. Y.

C. E. Thomas, Wimberly & Thomas Hardware Company, Birmingham, Ala.

Bruce Keener, E. M. McClung & Co., Knoxville, Tenn.

W. B. Fox Jr., W. B. Fox & Bros., New York.

Jas. Hutchinson, Stanley Works, New York.

H. P. Stone, Warren Axe & Tool Company, Warren, Pa.

S. R. Leonard, Oneida Community, Limited, Kenwood, N. Y.

A. N. Kinsley, Oneida Community, Limited, Kenwood, N. Y.

Max Klass, New York.

W. B. Lashar, Bridgeport Chain Company, Bridgeport, Conn.

W. W. Woodruff, W. W. Woodruff Hardware Company, Knoxville, Tenn.

Walter Ayers, Weber-Ayers Hardware Company, Ft. Smith, Ark.

O. C. Mead, Mead & Smith, Louisville, Ky.

H. A. Byer, Bering-Cortes Hardware Company, Houston, Texas.

F. H. Hammond, Chicago Belting Company, Chicago, Ill.

John S. Tilley, Watervliet, N. Y.

J. R. Gillillin, Belfont Iron Works Company, Ironton, Ohio.

S. R. Gillillin, Belfont Iron Works Company, Ironton, Ohio.

C. A. Earl, Corbin Screw Company, New Britain, Conn.

C. A. Gilpin, American Sheet Steel Company, New York.

Oliver Malone, Russell & Erwin Mfg. Company, New York.

Chas. Stollberg, American Can Company, Toledo, Ohio.

G. W. Barnett, G. W. Barnett Hardware Company, Montgomery, Ala.

P. A. Walker, Lovell Mfg. Company, Erie, Pa.

O. C. Mead, Kilbourne & Jacobs Mfg. Company, Louisville, Ky.

J. C. Birge, St. Louis Shovel Company, St. Louis, Mo.

A. H. Griffin, J. Stevens Arms & Tool Company, Chicopee Falls, Mass.

V. A. Moore, American Iron & Steel Mfg. Company, Atlanta, Ga.

H. O. Butterfield, Beckwith Card Co., Stafford Springs, Conn.

Joseph E. Stern, *American Artisan*, New York.

F. A. Oakman, Lamson & Goodnow Mfg. Company, Shelburne Falls, Mass.

Wm. M. Pratt, Goodell-Pratt Company, Greenfield, Mass.

W. P. Cooley, Hart & Cooley Company, New Britain, Conn.

Walter Waghorn, Gem Mfg. Company, New York.

C. F. Carrier, Cronk & Carrier Mfg. Company, Elmira, N. Y.

W. P. Field, Geo. Wostenholm & Son, New York.

H. J. Turner, U. S. Hame Company, Buffalo, N. Y.

W. P. Ayer, Walworth Mfg. Company, Boston, Mass.

V. P. Humason, Chapin-Stevens Company, New York.

A. J. Lowery, Wright-Dana Hardware Company, Utica, N. Y.

B. H. Wright, Wright-Dana Hardware Company, Utica, N. Y.

T. E. Mooney, the Bradford Belting Company, Cincinnati, Ohio.

J. H. Towne, Yale & Towne Mfg. Company, New York.

J. W. Sullivan, Russell & Erwin Mfg. Company, New York.

Edward Meyer, Russell & Erwin Mfg. Company, New York.

J. H. Kennedy, *Hardware Dealers' Magazine*, New York.

Edgar C. Neal, Buffalo Wholesale Hardware Company, Buffalo, N. Y.

A. E. Bonesteel, A. E. Bonesteel, Troy, N. Y.

S. J. Parkhill, Russell & Erwin Mfg. Company, New York.

E. Whitney Tillinghast, 2d, J. M. Warren & Co., Troy, N. Y.

### THE BOYCOTT AND HOW IT CAN BE DESTROYED.

BY DANIEL DAVENPORT, BRIDGEPORT, CONN.

Last fall a meeting of manufacturers in various lines was held in New York City to consider what, if anything, could be done to recover the right of every man to run his own business and of every man to work in this country without being molested or made afraid, whether he belonged to a labor union or not. A very large representation of the great industries of the country were present. Men were there who had grown gray in building up our industries. The proposition to be considered was indeed a novel one. That any one should question those rights in the United States seems incredible in the light of its history. And that they should be denied and practically overthrown seemed impossible. Yet the serious fact is that their enjoyment is practically destroyed in this country to-day, and the means of their recovery is the most serious social, economical and political problem which our country has been confronted with in all its history.

#### FUNDAMENTAL INSTITUTIONS THREATENED.

In comparison with it even slavery and secession were insignificant, for those evils were, in great measure, local, and were so opposed to the manifest interests of the greater part of the country and to the progress of society that it was possible to destroy them without shaking to its foundations the social structure. But to-day the whole country is in the grip of an evil which is eating like a cancer into the very vitals of its fundamental institutions. Personal liberty, law and order seem things of the past, and organized public sentiment for their recovery does not exist.

At the meeting mentioned it was considered that the absolute freedom of men to make contracts, to manage their own business according to the dictates of their judgment, and of men to acquire and follow trades and gainful employment free from all molestation and fear, was the vital force which had impelled American civilization along its wonderful career hitherto; that without it our wonderful prosperity will certainly wither and perish and that it must be recovered at all hazards. The great question before the meeting was, What line of action shall be taken to regain it?

Certainly those rights will never be secured through their practical abandonment by their possessors.

#### EVERY SURRENDER OF THE RIGHT OF THE INDIVIDUAL

into the hands of others, whether they be his fellow employers or his employees or the representative of some outside party, only makes the matter worse. To concede the right of men to band together to control the lawful actions of others and then to require that the questions in dispute shall be submitted to arbitration for decision is a fatal policy, the mournful consequences of which no man can now conceive. There is only one path along which this country can safely travel, and that is the preservation in all its integrity of the absolute and entire freedom of action of the individual, and public sentiment must be aroused in some way to an adequate appreciation of that fact. Whatever tends to destroy that principle or to weaken the public interest in its continuance must be condemned as hostile to the well being of society and be opposed at all hazards.

#### AMERICAN ANTI-BOYCOTT ASSOCIATION.

Accordingly, after deliberating all day, the meeting finally resolved that the only way that the liberty of the individual would ever be recovered was to get the laws enforced, which are the security of his rights, and they resolved to form an association to be devoted solely to that purpose. They appointed a committee of leading manufacturers to prepare a plan and report it. They performed their task and their work was approved. The membership of the association, which is private, is now very large and strong.

Since the great weapon by which these rights are assailed and practically destroyed is the boycott, using that term in its comprehensive sense of the prescription of a man, of the product of a man's labor or of his business, they called their association the American Anti-Boycott Association.

The preamble and first clauses of their constitution read as follows: "The undersigned, aware of the far reaching consequences and dangerous extent of the boycott, threatening capital by arbitrary proscription and labor by tyrannical persecution, form themselves into an association and adopt the following constitution for their government: The name is the American Anti-Boycott Association. The object of the association is to resist the boycott by proper and legal means, and to assist in the enforcement of the laws against the same. Membership not to be made public, but publicity given to the organization."

The intent and hope of the gentlemen who inaugurated this movement is to unite all the great manufacturing, transportation, mining and mercantile interests of the country in a movement for the enforcement of the laws which the people have made for their own protection, and to enable those who have nothing but their hands and their dexterity to live by to work in peace and safety. In such a movement every decent man can join, impelled thereto by the highest motives of patriotism and enlightened self interest.

#### THE BOYCOTT AS A WEAPON

to coerce employers of labor to discharge nonunion men and to surrender the management of their own business and to restrict their output has now become a very serious menace to the interests and fundamental rights of individual employers and employees and to the industrial prosperity of the country. Its use is a distinct violation of the law of the land. The instances in which it is employed are innumerable. The individuals attacked are unable single handed to combat it effectively. A combined effort on the part of all good citizens is sorely needed to educate the people of the United States to a realization of the extent to which the practice is carried, and of its illegality and of its disastrous effect upon their welfare. It is the belief of the manufacturers who planned this organization that in no other way can the education of the people of the United States as to the laws against boycott be better accomplished, and public sentiment more speedily and effectively developed as to their iniquities and harmful character, than by the public trial of cases in the courts, brought to their attention under the auspices of a strong and effective organization created for the purpose of seeing that the laws are enforced relating to them.

The organization is unlike other existing associations for mutual protection among manufacturers, most of which contemplate the raising of funds to be disbursed in assisting any of the members suffering from strikes.

#### THE PURPOSE OF THIS ASSOCIATION

is to destroy the practice of boycotting by aiding its members to secure legal protection through the courts, and as a consequence to enlighten the public and create a strong public sentiment against the evil. The larger the membership is the less will be the cost to each member, and the larger the opportunity for obtaining suitable test cases.

It must be apparent to every thoughtful man that the various makeshifts which are resorted to in dealing with the labor problem, such as collective bargaining by groups of employers and labor unions, conciliation and arbitration and all such, can never restore industrial peace to our distracted country. They all contain the vice of depriving the individual of that liberty which is essential to enterprise and to the successful conduct of his business. What is needed is a revival of the old fashioned

#### AMERICAN SENTIMENT OF LIBERTY.

It cost a great price to establish that liberty upon a sure foundation. In my own State, Connecticut, for 100 years during four succeeding generations every man was a soldier. He was a soldier when he sat at his meals, a soldier when he stood in his door, a soldier when he went to the cornfield, a soldier when he went to the house of worship, a soldier by day and by night. Think not that the great heritage which we have received from the past can be regained in these troublesome times without a great effort. Intelligent co-operation along the lines of enforcing the laws which have been made to

secure the fundamental rights of man is absolutely necessary, and the people of this generation must be prepared to make whatever of effort or sacrifice is required.

#### WHO HAS THE RIGHT TO ROUTE SHIPMENTS, THE BUYER OR SELLER?

BY E. A. PEDEN, PEDEN IRON & STEEL COMPANY, HOUSTON,  
TEXAS.

Why this subject has been allotted to me I don't know. I presume, however, it is because Texas is further away from the source of supply than any other State here represented; the route is longer; our shipments consume more time to reach us and therefore we are perhaps more deeply interested in this proposition than those of you who are closer home and who can get their goods a day or two after they order them. To us in Texas it is a matter of the very gravest importance. As I understand it, we are guests this morning of the manufacturers. I come before you this morning to ask that you divide the matter with us. We are not like old Uncle Rube, who went to the camp meeting and heard the sermon about praying for what you want and getting it. He went home and got down on his knees and he says, "Oh, Lord, I have been hearing that whatever I



E. A. PEDEN.

ax for that I am sure to get. I pray, oh Lord, for a barrel of watermelons and a barrel of 'possums and a barrel of sweet potatoes and a barrel of pepper. Oh, Lord, no, that is too much pepper."

Now, we do not want it all, but we want some of it. You manufacturers tell us if we attempt to control the route of our carloads you are short of empties; you cannot get the cars switched sometimes for days and weeks; therefore we should not attempt to dictate, and in many cases it is no use to request the routing at this end. If that is true, and I have no doubt it is, then there is another side of the story. In our case down in Houston—I suppose it is so with every jobber—we have warehouses on certain switches, and there are one or two roads that can always deliver our cars after arrival a little quicker than others. Therefore, we would like to have the routing at the other end; you have the initial routing and give us the destination routing.

Of late years the manufacturers have displayed a selfish disposition, especially in reference to such items as Nails and Barbed Wire, Bar Steel, Iron Sheets, &c., and I address my remarks to that line of products bought in car lots. I would request in that connection that you bear in mind and tell your shipping clerks when you go home to put the routing in the bill of lading; show how it is going to reach destination, fill in the weight and freight rate, and you will save us many long winded railroad claims—and the railroads don't pay interest on the claims.

Now conditions are changing with us. I have no doubt that jobbers from other States can give you instances of their prosperity, but down in Texas the time is rapidly coming when we will have some goods to ship ourselves—when we will have more freight coming this way than we ever had before. The speaker then referred to the use of what had been considered heretofore as worthless land in Texas, but that now was being planted in rice. He also referred to the production of oil.

Continuing, Mr. Peden said: These are only a few instances, and I refer to them because we have a great future down there, and I believe it is to our mutual interest that we handle all these propositions liberally and fairly and with justice to each other.

The speaker then referred to the olden days, when the railroads furnished passes freely to the jobbers and shipments were traced from origin to destination promptly by the commercial agent; but this was not the case now. He said in those days the word rebate was often heard, but this was no more. He said that many times shipments from Pittsburgh took five and six weeks to reach Texas.

In closing he said: Therefore, I repeat my proposition—that you allow us half the routing; we do not ask for the whole. Or better still, if you are going to control the routing, then change your terms to us, especially on these carload goods; let your terms date from the date of arrival. It has often been the case during this past winter when we have had \$30,000 to \$35,000 in freight on the railroad that we had not seen. In conclusion I want to say that our institutions in Texas are built upon the plains where the red Indian used to roam, and we have inherited one of his traits—when we are treated wrong we do not forget it very easily; but I am glad to say to you that there is one thing we remember a great deal longer than we do a wrong, and that is a right. Treat us right, treat us fairly, and we will remember that when the impression of harsh treatment has long passed and been erased.

#### ADVANTAGES AND DISADVANTAGES OF MAXIMUM CONTRACTS.

BY ROBERT EIKEL OF F. W. HEITMANN COMPANY, HOUSTON,  
TEXAS.

That the tendency of the times is toward more restricted so-called contracts is no doubt apparent to all buyers, and while no special change is noted at this particular time, there has been some improvement in recent years, due very largely to the realization that such contracts were often one-sided affairs, and that business conditions had improved so that manufacturers could assume a more independent attitude than when their business was less prosperous.

But, as in all things, there is room for improvement. In many lines the same old slipshod way of contracting is still in vogue. Why should a buyer be permitted or asked to contract for a greater quantity than his actual requirements for the stipulated period? And why should not a contract be automatically decreased month by month, if the buyer does not specify a given quota in that time? Would not the jobbers be benefited by such a method as much as the manufacturer?

#### VALUE OF STOCK CONSTANTLY CHANGING.

In the good old days when the merchant bought a line of goods he added a certain profit and fixed his price, which was the figure at which the goods were sold as long as this lot lasted, irrespective of changed market prices. Not so to-day. Due to the intelligent efforts of various Hardware associations, we gradually learned that the stock of merchandise in our store is changing in value day by day, and that our selling prices must be quickly adjusted to meet changed conditions. In case of an advance to reap the benefit, and in case of decline to quickly get rid of high priced stock to avoid possibly greater losses, and, above all, not to fall behind our perhaps more fortunate or aggressive competitor, who quickly posts our customers.

A contract should be binding upon both parties. It should be a *bona fide* agreement to take a certain amount of goods, at a certain price, in a certain given period

of time. If this was done in all lines usually contracted we would not hear of so many prices below the values of the day on account of old contracts. It must be plain that this not only cuts into the profits of the jobber, but affects the retailer in a like manner.

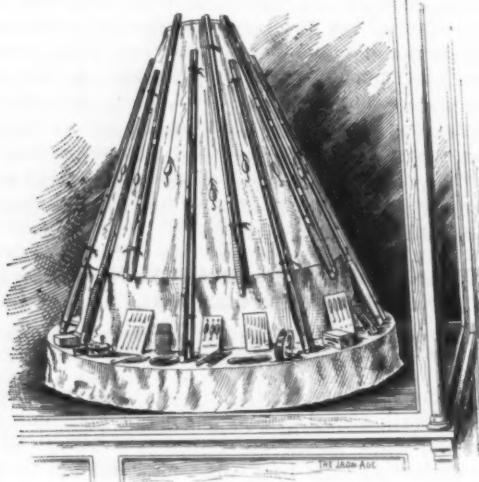
Uniformity of prices is, I believe, to-day accepted as the proper thing; therefore anything which tends to establish uniformity in prices should meet with encouragement from the jobbers. The inducement of 5 per cent. less for a certain quantity of goods, which is larger than the jobber can handle in his regular territory, is often the cause of unloading in territory not tributary to his bailiwick.

#### THE IDEAL CONTRACT

should provide: A definite quantity to be taken at a definite period or during a certain length of time, provided that this quantity be reduced proportionately at certain intervals, whether specified for or not. The maximum quantity to be based on the buyer's previous purchases and to cover his actual requirements, and not a speculative amount.

### A REVOLVING FISHING TACKLE DISPLAY.

**I**N the store of Hull Brothers Company, Danbury, Conn., a Fishing Tackle display was recently made, as is shown in the accompanying illustration. The display stand illustrated was covered with Rods, Bobs, Hooks,



*A Revolving Fishing Tackle Display.*

Reels, Lines, Bait, Sinkers, &c. The whole was then revolved on a vertical shaft which passed from the cellar through a hole in the floor of the window and was operated by a small turbine. The fact that the display was a moving one attracted much more attention to the window than had it been stationary.

ON account of the rapid increase in the sale of the Cyclone Seed Sower, the Champion Seeder Company, Urbana, Ind., have deemed it advisable to change the name of the concern, and after August 1 the business will be conducted under the style of the Cyclone Seeder Company. The business will continue under the former management, but with new associations and also new and enlarged manufacturing equipment.

**COL. MORRIS B. BELKNAP** of Louisville has been nominated for Governor by the Republicans of Kentucky. Colonel Belknap is widely and very favorably known to the trade throughout the country as vice-president of the Belknap Hardware & Mfg. Company.

**KILGORE & ATKINSON SPORTING GOODS COMPANY**, Homestead, Pa., are expecting in the near future to increase their capital stock from \$20,000 to \$50,000, to take care of their steadily increasing business. The sales of the company during May and June were by far the largest in their history. Their trade extends over Western Pennsylvania, West Virginia and a part of Ohio.

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## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, {  
NORFOLK ST., LONDON, W. C., July 11, 1903.}

### The Week's Hardware Trade.

THE old quarter has gone and the new quarter has come, but the promised good trade still provokingly keeps at a distance. The most striking feature of trade during the past week or two has been the tightness of money. Money has been more difficult to get in recently than I ever remember before. An American importer laughingly told me last week that when he wants money he goes and knocks a man on the head and rifles his pockets. "It is the only way," said he, "for you may be sure there is nothing in the bank." I hear of reputable firms who are giving post dated checks for quite small amounts. We are now having a spell of unusually hot weather, and this has stimulated demand for Refrigerators, Meat Safes, Hose and Hose Fittings, Watering Pots, &c. In outside lines such as these trade is quite lethargic. On overseas account trade is not so dull as at home. The South African demands are becoming more regularized, and there is not the same rush in consequence, but the trade done is solid. The financial difficulty is still a feature of South African trade, and although it is perhaps unpleasant to refuse business, I advise the greatest possible caution in opening new accounts in South Africa at the present moment. Improved demands have recently come from Europe, particularly for copper goods, Central and South America, India and New Zealand. The Australian demand is still slack. In fact, Australia seems to be in rather a bad way. Summing up the present situation, it seems to be a case of sluggish trade and tight money.

### A New Sheffield Hall Mark.

In the gold and silver trades some interest has been evinced in a new development in Sheffield, where the establishment of a gold assay will, it is thought, do much to encourage Sheffield trade. This will certainly be the case in connection with the manufacture of the more expensive articles of Cutlery. Very considerable quantities have hitherto been made with silver scales and fittings. Owing to the cheapness of that metal they have gone very much out of favor, and such parts are now being made of gold of 9, 15 and 18 carat. These goods are being produced in increasing quantities, and it will no doubt encourage the trade if Sheffield's Hall Mark can be placed on them, and on other goods made there. Hitherto it has been the practice to use a crown as Sheffield's mark of origin. It has been decided now to give Sheffield a distinctive mark for all gold wares made, and that it will be the York Rose.

The sterling silver trade is comparatively in a more satisfactory condition than the electro plate branch. For sterling goods there is a fair demand both for the home and some distant markets; but complaints are very general of the extreme scarceness of orders for best electro plate. The fact still appears to be that owing to the cheapness of silver, and the apparently small difference between sterling and plated goods, the one branch is prospering at the expense of the other. There is more business doing in many of the commoner grades of plated wares. Spoons and Forks are also selling well; but they are easily and rapidly produced, and do not furnish the labor that the production of hollow goods involves. There has been a fairly well sustained demand for bullion silver, and the market has been steadier and stronger than for a long time. At a recent date the price reached a higher point than for 12 months, but it did not materially affect the trade.

### The Half Year's Trade.

I am now in possession of full particulars giving the results of the export trade in Hardware and Metal Goods for the first half of this year. The total value of Cutlery, Hardware, Implements and Instruments exported from January to June reached £2,199,946, an increase of £83,207 compared with the first six months of last year and £122,142 compared with 1901. It will be observed that this comparatively trivial increase is practically represented by the revival of trade in South Africa. Without

giving in detail the six months' exports, one or two facts relating to British purchases of Hardware and allied goods may prove interesting. The value of bristles imported during the period in review reached £254,730, a decrease of over £30,000 compared with last year. On the other hand, the imports of caoutchouc advanced from £2,937,358 in 1902 to £3,624,876 this year. Ivory imported was valued at £167,817, a decrease of over £30,000 compared with last year. The value of imported Cutlery was £15,947, a slight increase on last year, but a decrease compared with 1901. Imported Hardware reached the large sum of £690,755, an increase of £34,000 compared with last year, and an increase of over £180,000 compared with 1901. The increasing purchases of Hardware goods is obviously a most important feature, and one which is well worth the consideration of American exporters. I think there can be no doubt that at the moment the majority of Hardware imported into this country comes from Germany. This need not continue so indefinitely, but if American exporters want to increase their Hardware trade with Great Britain they must go at it more seriously than they have done during the past two years.

### The British Bedstead Trade.

An event of unusual interest is the strike of workmen engaged in the Bedstead works of John Hoyland, Ltd., of Birmingham. This firm at one time was known as Hoyland & Smith, the Smith in the concern being none other than E. J. Smith, the founder of the well-known system of trade alliances which characterized the Midlands two years ago. The Bedstead Alliance recently fell to pieces, with the result that prices have also fallen to pieces, and stringent competition has been the order of the day. John Hoyland, Ltd., have notified their operatives of a reduction in wages, and have also modified the *personnel* of their workshops, increasing the proportion of their boys to the number of adult operatives. These difficulties are being felt by other Bedstead manufacturers, and one hears rumors of an industrial struggle in this trade which may have far reaching effects. In connection with Metallic Bedsteads I have noticed recently a distinct tendency among buyers to purchase Wooden Bedsteads of the American pattern. They are certainly much prettier, and in nine cases out of ten more in harmony with bedroom furniture. The present is a good opportunity to push this particular trade.

### More Trouble.

I observe that generally these industrial troubles come when trade is sagging. Thus, in addition to the Metallic Bedstead manufacturers, the Wrought Iron Tube Association are in difficulties. Price cutting has recently been the order of the day in this trade, and now an important Scottish Tube making concern threaten to secede from the ranks. The Tube making trade in this country for some time past has not been satisfactory, and if excessive price cutting is to be the next stage, I do not envy the future of this trade.

### A Personal Note.

I daresay most young Americans in the days of their childhood were taught to sing the hymn "There's a home for little children above the bright, blue sky." Whether it has ever reached America or not I cannot say, but certain it is that most Nonconformist children in Great Britain are taught it almost at their mother's knees. It is not so generally known that the author of this hymn is an ironmonger—Albert Midlane. Albert Midlane, who is now advanced in years, recently got into financial difficulties and filed his petition in bankruptcy. On this fact being discovered a number of his colleagues in the Hardware trade, together with the Sunday School Union, made a collection and paid his debts. During the past fortnight the bankruptcy has been annulled and the creditors paid 20 shillings in the pound.

CARL SCHMIDT of Graef & Schmidt, 107 Chambers street, New York, importers of J. A. Henckels' Cutlery, who left New York for Solingen, Germany, April 18, for the purpose of selecting new goods for the fall and holi-

day trade, returned July 14 on the "Kaiser Wilhelm II." Some of the new goods are now here and others will arrive later.

### REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS** for catalogues, price-lists, quotations, &c., have been received from the following houses:

FROM EDWARDS & SPRAGUE, Morrison, O. T., who have just opened up with a stock of Shelf Hardware, Stoves and Tinware, Agricultural Implements, Sporting and Athletic Goods, Wagons and Carriages, &c.

FROM R. W. MILLER & SON, Fairmont, O. T., who have succeeded Gensman Bros. & Miller in the Hardware, Stove, Agricultural Implement, Harness and Buggy business.

FROM McGHEE, WALKER & McGHEE, who are successors to McGhee & McGhee, at Bedford City, Va. The old firm handled Hardware only, but the new concern have added Farm Machinery, Buggies, Wagons, Harness, Lime, Cement, &c.

FROM KING & VIERCK, who have lately opened a new store at Rockford, Ill., handling Shelf Hardware, Tinware, Stoves and Furnaces.

FROM THE JONES HARDWARE COMPANY, Springville, N. Y., who have succeeded Jones & Morgester. The new firm consist of A. D. Jones, W. H. Morgester and J. Howard Borden. The capital has been increased and a plumbing and tinning department added, the store having been enlarged. Shelf Hardware, Stoves, Agricultural Implements, Paints and Oils and Sporting Goods are also carried.

FROM MILLER & CO., who have just commenced business at Yankton, S. D., their stock embracing Shelf and Heavy Hardware, Stoves and Tinware, Glass and Paints and Oils.

FROM CLIFT & HEILIG, who have lately engaged in the sale of Shelf Hardware, Stoves and Tinware, Agricultural Implements, Paints and Oils, Sporting Goods, &c., at Bluff City, Kan.

FROM CRUZE-STERLING COMPANY, Knoxville, Tenn. This concern have lately been organized for the purpose of carrying on a wholesale and retail business in Builders' Hardware, Paints, Oils, Glass, Sash, Doors and Blinds. The principals are W. L. Lyons, Chris. C. Cruze, O. P. Sterling and Lynn Hayes.

FROM E. J. CARLSON, who has purchased the Shelf Hardware, Stove and Paints and Oils business formerly conducted by O. Hult, Verona, Neb.

FROM JELlico HARDWARE COMPANY, Jellico, Tenn., who have been organized with a capital of \$25,000, the incorporators being A. J. Beaver, Richard Baird, S. W. McCombs, F. M. Peck and W. T. McGuire. The company will handle general Hardware, Stoves and Tinware at wholesale exclusively.

FROM BRISLIN BROS., who have just opened a Shelf Hardware, Stove and plumbing establishment at Wilkes-Barre, Pa.

FROM WADE HARDWARE COMPANY, Dunn, N. C., who have recently been incorporated with a capital of \$50,000 by M. L. Wade, J. J. Wade and D. H. Hood. The company will conduct both a wholesale and retail business, their lines including Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Glass, Paints and Oils and furniture.

FROM UNION HARDWARE COMPANY, who have succeeded Roupe Hardware Company at Broken Arrow, I. T.,

as dealers in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

FROM MARTIN BROS. & CO., Pulaski, Tenn., who have lately organized to carry on the sale of Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Wagons, Harness, Harvesting Machinery, Boilers and Engines, Wind Mills, &c.

FROM GOHMERT & METZ, who are just about to open a new store at Nordheim, Texas, handling Shelf and Heavy Hardware in addition to furniture.

### TRADE ITEMS.

FOLLOWING the election of C. E. Jennings of C. E. Jennings & Co., 101 Rende street, New York, to the directorate of the Southington Cutlery Company, Southington, Conn., the former house are now the New York headquarters of the Cutlery Company for the sale of their entire line of goods, among which are Pocket Knives, Razors, Steel Squares, Wood Screws, Stove and Tire Bolts, Currycombs and Emery Wheel Dressers. C. E. Jennings & Co. will carry both samples and stock at the New York address.

AT a recent meeting of the stockholders of the May & Thomas Hardware Company, Birmingham, Ala., the capital stock was increased from \$75,000 to \$150,000, which was subscribed and paid in. The style of the house was also changed to Wimberly & Thomas Hardware Company. The officers continue, as for a number of years, as follows: C. E. Thomas, president; J. H. McCune, vice-president, and T. F. Wimberly, secretary and treasurer.

THE report that the American Shovel & Stamping Company would remove their plant from Lorain, Ohio, to some other location is incorrect. It is true, however, that several large stockholders of this concern have organized a company for rolling much of the material used by the American Shovel & Stamping Company, and are now looking for a location for their plant.

THE GLOBE FENCE COMPANY, Jackson, Mich., organized with a capital of \$500,000, have under consideration a change in the location of their factory. Stockholders of the company are represented in the cities of Adrian and Hudson, as well as Jackson, Mich., and the relative advantages afforded by all three cities are being investigated with a view toward the establishment of the plant where the greatest facilities, especially for shipping, are afforded. The one machine which the company have already completed has turned out about 8000 rods of Fence, 4000 rods of which have already been sold. Officers of the company are: Edw. Frensdorf, president; J. M. Lamb, vice-president; A. C. Mills, secretary, and A. M. Lamb, treasurer.

THE merging of the Indiana Shovel Company and the Xenia (Ohio) Handle Company into what will be known as the Indiana Rolling Mill Company, together with an increase in the capital stock of the combined companies to \$400,000, was effected at a meeting of the stockholders held at New Castle, Ind., July 10. The Indiana Shovel Company recently completed a plant at New Castle, which is now being placed in operation.

D. T. HARRIS, who has been Pittsburgh representative of the Norvell-Shapleigh Hardware Company of St. Louis, will leave that city about August 1 for St. Louis, where he will in the future have his headquarters. Mr. Harris has been promoted to traveling sales manager, and will have to do with salesmen throughout the country. E. H. Voight, formerly of the Bindley Hardware Company of Pittsburgh, and John N. Hessian, formerly of Logan, Gregg Hardware Company of Pittsburgh, will look after the interests of the Norvell-Shapleigh Hardware Company in Pittsburgh.

NATIONAL PAINT WORKS, Williamsport, Pa., have opened a New York office at 92 William street, which will be under the management of F. P. Cheesman. The company are manufacturers of Prepared Paints in all forms for all purposes, put up in 1, 2, 3, 4 and 5 gallon pails, half barrels and barrels.

## AMONG THE HARDWARE TRADE.

Webber & Bradley in the Hardware, Stove and furniture business in Ogalalla, Neb., have dissolved, and S. M. G. Bradley is successor under his own name. Mr. Bradley has put more capital into the business, and has made a number of improvements in the store.

The store of Wilson & Wilson, Mason City, Ill., was robbed on the 8th inst. of three Revolvers and about four dozen Pocket Knives. A reward of \$25 has been offered for the apprehension of the thieves.

Cottee & Payne Hardware Company have recently engaged in the wholesale and retail business in Clinton, O. T., handling a line of Hardware and Farming Implements.

Lake Bros. Hardware Company, Dallas, Texas, have been incorporated with a capital stock of \$50,000, and will conduct the wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware and Crockery.

Preston Day has bought the Hardware, Stove, Agricultural Implement, Lumber and furniture business of Holcomb & Whitney, in Castle Rock, Col., and will continue at the old stand.

Waorunek & Dolesy, Lawton, N. D., have disposed of their lumber and building material business to Lamb Bros. & Kops, but will continue to handle Hardware as heretofore.

E. E. Burnham, Deerfield, Mich., has disposed of his Hardware and grocery business to Baker, Osgood & Co.

W. P. Clark Company, Lynchburg, Va., have been incorporated by W. P. Clark, O. B. Barker and D. A. Bonitz. The company will do a wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware, Farming Implements, Glass, Paints and Oils and Sporting Goods.

Haskell & Cook Bros. have purchased the Hardware, Stove and Agricultural Implement business formerly conducted by J. O. Barrett.

J. W. Conard & Co. are successors to Conard & Brown in the Hardware business in Gilbert Station, Iowa.

Redfield Hardware Company have succeeded E. B. King in the Hardware, Harness and Paint and Oil business in Redfield, S. D.

The new store of the Frank Gilbert Supply Company, Sharon, Pa., is admirably adapted to the requirements of their large and growing business. This house was organized some months since, Frank Gilbert, formerly con-

floors being devoted to the wholesale department. The company handle Builders' Supplies of all kinds, Mill and Factory Supplies and General Hardware.

A. J. Harwi Hardware Company, Atchison, Kan., have bought Louis Erhardt's extensive Sporting Goods business, the intention being to make Sporting and Athletic Goods a big department in the company. The stock will be handled where it is for some time to come, as the Harwi Company's warehouses are already crowded for room, and it will take time to make provision for the newly acquired stock.

## MISCELLANEOUS NOTES.

### Sun Dials.

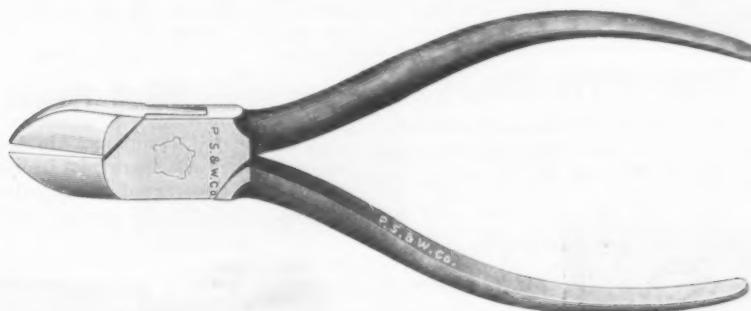
R. Christensen, 88 Chambers street, New York, who handles various kinds of builders' and upholsterers' hardware, is marketing a line of sun dials made of brass in two different styles, both of which are designed especially for this latitude. One is 12 inches square and the other, of octagonal shape, 14 inches in diameter. They are particularly suitable for country residences, and can be placed either on a tree stump or similar pedestal, or inserted in a rock in some picturesque way, as suits the fancy of the individual. The face of the dial is arranged like the dial of a clock with Roman numerals, the time of day being determined by the sun's shadow cast by the edge of a gnomon or vertical triangular strip of metal in the center of the horizontal plate or dial.

### Lubriphite.

The Lubriphite Company, Jersey City, N. J., have put on the market a lubricating compound called Lubriphite, which is a patented preparation of fine graphite in oil, so assembled that the graphite is continually kept in suspension. The oil is largely a vehicle for introducing the graphite into otherwise inaccessible places, especially in connection with high duty cylinder lubrication. It is particularly recommended for use in connection with superheated and high pressure steam, air, gas and oil. This lubricant, usable with any approved lubricator, automatically and uniformly sight feeds the graphite so held in suspension. What is claimed for this improved form of lubricity is a low coefficient of friction; adhesive property, whereby the rubbing parts become veneered; non-corrosive action on wearing parts; protective or preservative action on the interior of cylinder; noninterference by wet or dry steam, gas, oil or air even at high temperatures, and the ease with which it can be fed.

### Diagonal Cutting Pliers.

Peck, Stow & Wilcox Company, Southington, Conn., and 27 Murray street, New York, have just put on the market the No. 27 Swedish pattern diagonal cutting plier here illustrated. It is forged from high grade crucible



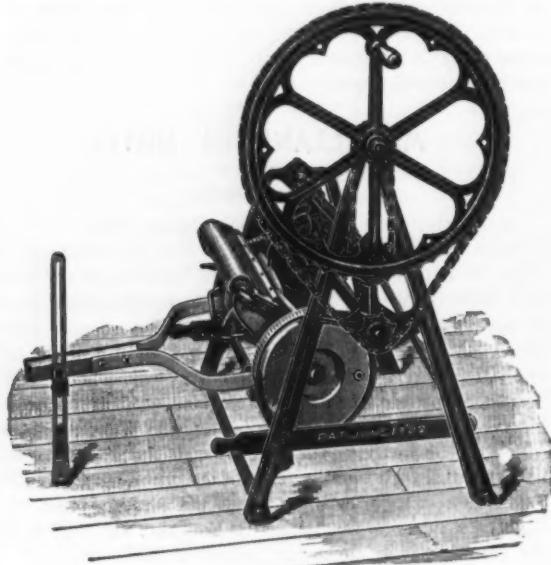
Diagonal Cutting Pliers, Swedish Pattern.

nected with the Fruit-Ohl Company, being president and manager. The earlier quarters occupied by the company were found inadequate, and they are now located in a fine three-story and basement structure on East State street near the Pennsylvania Crossing. The retail department occupies the first floor, the second and third

steel and has a box joint. Another plier similar in character, numbered 37, has raised cutters. Both are made in 4½, 5 and 6 inch sizes, of the best material, and are recommended by the manufacturers for expert mechanics, and particularly for telegraph and telephone use. They are put up in boxes containing one-half dozen.

**Ideal Lawn Mower Grinder.**

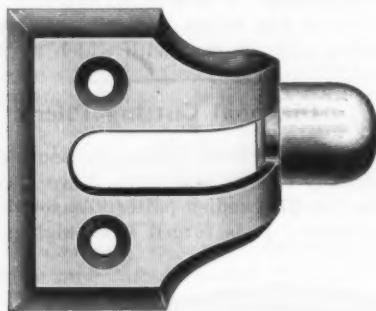
The Root Bros. Company, Plymouth, Ohio, are offering the lawn mower grinder shown herewith. In operation the mower is placed upside down on two horizontal adjustable rods, and the blade is fastened to the emery wheel by a little clamp. The emery wheel is made to

*Ideal Lawn Mower Grinder.*

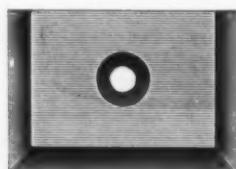
revolve on the lower shaft by turning the crank, and at the same time to slide along on the lower shaft from right to left. This it does in less than one minute to each blade, taking out, it is explained, every inaccuracy in the blade, making the bevel exactly alike at every part and giving any clearance desired. The knife bar can be sharpened, it is pointed out, just as easily and quickly. The machine can also be used for grinding chisels, plane bits, &c.

**Ives' Window Ventilating Lock.**

The H. B. Ives Company, New Haven, Conn.; John H. Graham & Co., 113 Chambers street, New York, selling

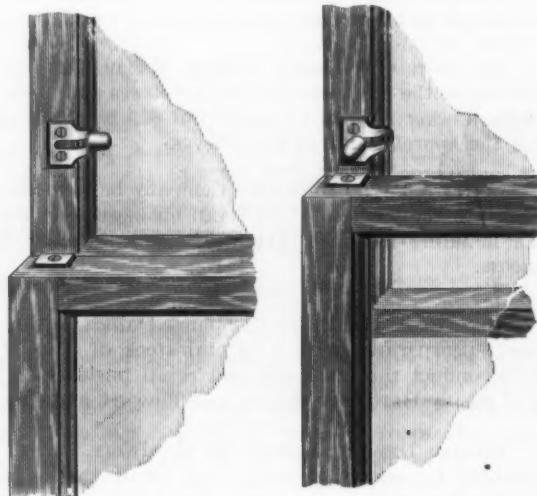
*Fig. 1.—Ives' Window Ventilating Lock.*

agents, have just put on the market the Ives window ventilating lock, as shown in the accompanying illustrations. Fig. 1 illustrates the adjustable lock device, which is

*Fig. 2.—Strike Plate for Top of Lower Sash.*

placed on the upper sash, as shown in Figs. 3 and 4, Fig. 2 being a strike plate screwed to the top of the lower sash. Fig. 3 shows the locking device with the lock pin pushed forward nearest the glass so as to allow the

sashes to pass each other in the ordinary way. Fig. 4 is another view which represents the sliding pin brought forward so as to permit of the upper sash in sleeping or other rooms being lowered to the proper point for ventilation.

*Fig. 3.—Lock Applied to Upper Sash.* *Fig. 4.—Upper Sash Down 6 Inches.*

tion, according as this part is put on the sash, and yet leave the window securely locked. The lock is shown so placed as to allow the upper sash to be lowered about 6 inches. It is a simple device that requires neither mortising nor the boring of holes to apply it, being fastened by screws in the ordinary way. These locks are made in plain iron, bronzed and electro copper plated, antique finishes; also plain iron, polished, both Bower-Barffed and electro copper plated, antique finish. For finer grades they can be obtained in plain bronze metal, either highly polished or antique copper finish.

**Yankee Screw Driver Countersink.**

The North Bros. Mfg. Company, Philadelphia, Pa., are putting on the market the countersink shown herewith, for use in their No. 30 Yankee spiral ratchet screw driver. It is referred to as being made of superior tool steel, and

*Yankee Screw Driver Countersink.*

can be used in either hard or soft woods. The end of the countersink is the same as the ends of bits used in screw drivers, and is put in the tool in the same manner as the bits.

**Peach Pitting Knife.**

The Goodell Company, Antrim, N. H., and 10 Warren street, New York, have just brought out the peach pitting knife, here illustrated about half size, which supplements a large line of labor saving devices for kitchen use. It

*Peach Pitting Knife.*

is 6 $\frac{1}{2}$  inches long over all, the steel scoop or blade being 2 $\frac{1}{2}$  inches long beyond the handle, which is of light hard-wood, natural finish. The curved nature of the blade makes it especially suitable for freeing peaches or similar fruits from the pit.